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ABSTRACT

This guidebook is intended to help economic development practitioners adopt a realistic, principles-based approach to strategic planning applicable to areas with widely different technology assets. Part 1 examines elements of successful regional development in today's technology-driven economy (TDE). Chapter 1 focuses on ways a TDE can transform possibilities for economic development; explores the capacity that regions need to be prosperous in a TDE; and provides a framework for understanding elements of innovation-led development. Chapter 2 tells stories of regional reinvention in Austin, Texas; Louisville, Kentucky; and Tupelo, Mississippi. Part 2 describes the "how to" of strategic planning for successful development. Chapter 3 discuses how to build a broad-based team; the process of developing the leadership, civic participation, and expertise required for strategic planning; and the importance of carefully balancing each to maximize results. Chapter 4 examines these seven central elements of strategic planning for innovation-led development: initiate; visualize the future; assess; frame opportunities and challenges; develop action plans; mobilize for implementation; and renew the process. Part 3 is a detailed three-part appendix that includes: background on the knowledge economy and economic development; detailed information on how to conduct a regional assessment; and a list of technology tools and resources for strategic planning. (Contains 41 notes.) (YLB)

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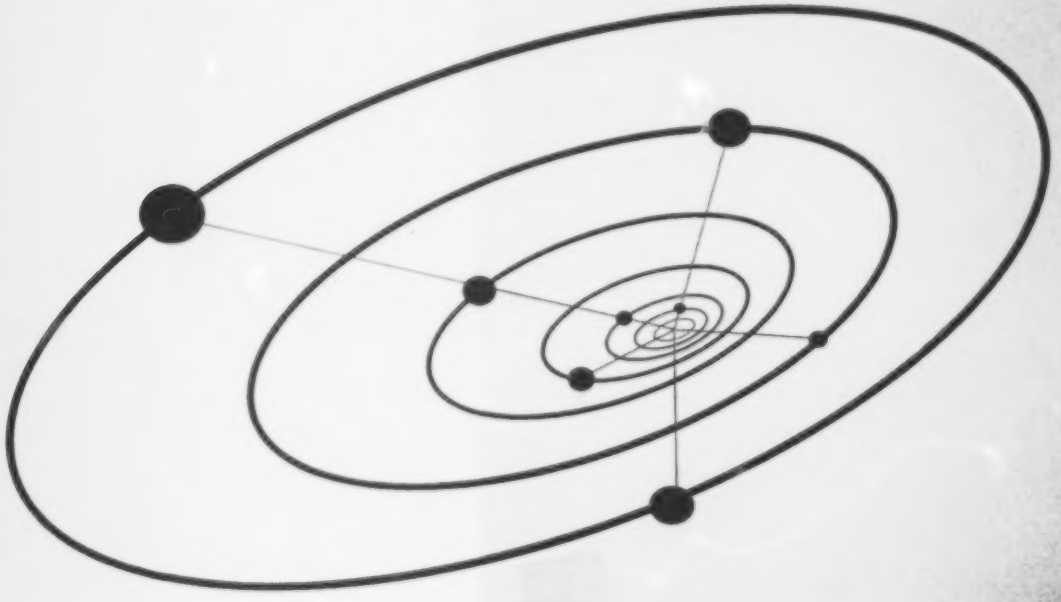

A Guidebook for Innovation-Led Development

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Preface

The purpose of ***Strategic Planning in the Technology-Driven World: A Guidebook for Innovation-Led Development*** is to help economic development practitioners adopt a realistic, principles-based approach to strategic planning, one that is applicable to areas with widely different technology assets. Based on "best practices" from across the United States, the recommended planning process captures both the real-world expertise and creativity necessary for success in an ever-changing, technology-driven world.

Divided into three parts, the guidebook is designed to provide information and resources for a diverse readership. **Part One** examines the elements of successful regional economic development in today's technology-driven economy. **Part Two** describes the "how to" of strategic planning for successful development. **Part Three** is a detailed appendix that, in turn, has been subdivided into three parts. The first provides background on the knowledge economy and economic development, the second offers detailed information on how to conduct a regional assessment, and the third provides a list of technology tools and resources for strategic planning.

Part One

Successful regions have the capacity to adjust continually to changing circumstances. These regions can identify and cultivate their assets, engage in collaborative processes, and encourage a regional mindset that fosters such growth. **Chapter One** focuses on the ways a technology-driven economy can transform the possibilities for regional economic development. It then explores the capacity that regions need in order to be prosperous in a technology-driven economy. The chapter also provides a framework for understanding the elements of innovation-led development. These include: knowledge economy assets; collaborative institutions and organizations; community mindset; and entrepreneurship.

Strategic planning in today's economy is about the ability to reinvent, building upon a region's existing strengths and potential. **Chapter Two** tells three stories of regional reinvention in Austin, TX; Louisville, KY; and Tupelo, MS. Though these narratives are very different, they share important underlying themes. They illustrate how three widely divergent regions share similar underlying approaches and practices to development that have been vital to their success.

Part Two

Innovation-led development requires the participation of a broad-based team. **Chapter Three** focuses on how to build such a team. It discusses the process of developing the leadership, civic participation and expertise required for strategic planning as well as the importance of carefully balancing each in order to maximize results. Some of the questions the guidebook considers are: Who participates in strategic planning? Why? What are the ways to engage broad civic participation?

Strategic planning for innovation-led development is a collaborative, ongoing process. In some detail, **Chapter Four** examines the seven central elements of strategic planning for innovation-led development. They are:

- initiate;
- visualize the future;
- assess;
- frame opportunities and challenges;
- develop action plans;
- mobilize for implementation; and
- renew the process.

Part Three

Today, economic development focuses on being in sync with the rhythms and dynamics of the technology-driven world. **Appendix A** provides additional context on the nature of the technology-intensive knowledge economy. It also includes a series of illustrations of regional capacity building for innovation-led development.

To create a sustainable and actionable vision for a region's future, it is imperative to ground it in a region's current strengths and reachable potential. **Appendix B** provides a detailed "how to" approach for the vital strategic planning step of self-assessment.

Once a region has a strategic plan, it can then carefully choose technology tools to achieve its objectives. **Appendix C** includes a list of technology tools used in strategic planning and references to resources.

It is hoped that this guidebook will prove useful to a broad range of development practitioners and regional leaders, serving the needs of those with large and diversified economies as well as those in small rural communities. Preparing a work of relevance for such a diverse audience is always challenging. However, both the research and the experiences on which the guidebook builds reveal a core set of shared approaches and practices. These shared approaches and practices have helped successfully to transform the economic development of regions large and small, rural and urban, distressed and strong, and so-called "high tech" and "low tech."

Part One

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CHAPTER ONE: Introduction to Strategic Planning in the Technology-Driven World

Responding to the Technology-Driven World

For more than two decades, a substantial portion of regional development activity in the United States has been focused on high technology. During the severe recession of the early 1980s, hard-hit manufacturing regions around the country sought to emulate the buoyant university-based, technology-driven economies of Route 128 around Boston, MA, and Silicon Valley in northern California. A decade later, in the 1990s, the rapid economic growth of areas like Austin, TX, and Atlanta, GA, which was based on information technology and biotechnology, encouraged a near-obsession with technology-based economic development and planning.

While many regions have benefited from the technological transformation of the national economy, few have achieved their vision of becoming "world-class centers of excellence" in high technology. Their experiences suggest that the phenomenon of technology-driven development is neither easy to achieve nor well understood.

Less-successful approaches often bear some element of unrealistic imitation. For instance, some regions have looked at Silicon Valley, Austin, and Boston and said, "We can be just like them." The reality, however, is that they have failed to understand how their regions differ from these high-profile successes. Building world-class, competitive technology regions cannot come about through blind emulation. Building research parks and small business incubators does not ensure that "they will come."

Conversely, some regions not well endowed with technology assets, such as a major research university or technology leader, have looked at Silicon Valley, Austin and Boston and said, "We could never be that successful." The reality, surprisingly, is that they can. True, they may not be able to build another Austin, but they can use the development principles of places like Austin as a guide to building upon their current asset base in order to compete in a technology-intensive economy.

No doubt, these examples are extreme. Few places are guided solely by thoughts of a magical transformation or, conversely, by such doubt that they give up on themselves. Some regions are able to strike that delicate balance between bold vision and critical pragmatism in their planning. Many regions struggle with knowing how to create a highly successful, ongoing strategic planning process in an environment vastly accelerated and qualitatively changed by technology. Even those regions that experience successes still have a lingering sense that they can do more.

Not every region can be world-class in biotechnology and information technology. However, experience suggests that every region, no matter its characteristics, can plan strategically to translate its assets into greater wealth. Evidence suggests that every industry — whether "new economy" or "old economy" — can be improved (if not transformed) through technology, innovation and entrepreneurship. Fundamentally, ***every regional economy can be reinvented***.

In this way, the copycat and defeatist caricatures suggest the importance of "the art of the possible." This art, based on lessons learned from successful regions, forms the essence of this guidebook. Success is not about the imitation of flourishing regions' visible outcomes or their visible inputs, such

as venture capital funds, business incubators and technology councils. Rather, success is about ***the adoption of the strategic planning process of thriving regions*** — a process in tune with the rhythms and dynamics of the uncertain, technology-intensive, global economy.

This strategic planning process:

- is demand- and opportunity-driven, creatively stimulating the assets of the region to build competitive positions in national and international marketplaces;
- promotes innovative, often technology-related, ideas in all realms of regional economic activity, not just the currently glamorous high-technology sectors;
- facilitates relationship-building across the region, for collaboration is essential to the innovation process; and
- is ongoing, iterative and non-linear, mirroring the flux and velocity of change in today's economy.

While these observations about the planning process are not entirely new to economic development, the costs of not heeding them have grown large. The complexity and uncertainty of today's economy makes effective strategic planning more important than ever, and the consequences of not planning – or unproductive planning – far greater.

The Role of Technology in Regional Economic Development

Economic growth is based on the development, adoption and creative application of new technologies. While every age builds on the technological achievements of prior eras, the last 40 years are unique because of the breadth and pace of technological advancement. In recent decades, new technologies have transformed the U.S. economy. New product development and greater technology-based productivity have led to the growth of higher value-added industries.[1] The higher the value added per worker, the greater the average earnings per worker. As a result, standards of living have risen dramatically.

At the same time, the worldwide adoption of new production, transportation and communication technologies have allowed competitors across the globe relatively equal access to materials, equipment and financial capital. Between the resulting expansion of global trade and the explosion of new products and services, industries are far more competitive and volatile than before. Firms producing the next new product leapfrog over one another as industry leader. Old firms must transform themselves or disappear. As technology allows firms to differentiate their products, competition advantage is increasingly based on ***value*** — unique qualities of performance — rather than cost. Today, there is far greater churning among industry competitors, as new firms enter, others leave or die, some grow, others downsize. The economy more frequently experiences the phenomenon the economist Joseph Schumpeter called "creative destruction."

For firms to survive and prosper, competitiveness now requires ***creativity*** in generating new viable ideas, ***speed*** in getting these new ideas to market, and ***flexibility*** in adjusting to market circumstances. The result has been a significant shift in how firms operate. They seek the personnel, practices, rela-

1 The value of a good or service is its sales price minus the cost of the raw materials and depreciated capital equipment required to provide it. Value added accrues to workers in the form of wages and salaries, and to owners in the form of profits.

2 See **Appendix A** for further discussion on the relationship between technology and economic wealth.

tionships and culture that enable creativity, speed and flexibility. And, they are aggressively restructuring their operations — the number of strategic alliances, acquisitions, outsourcing arrangements and spin-offs has grown enormously in recent years.[3]

As economic developers know, the United States is not a monolithic economy but rather a series of regional economies. These regions do not conform to political boundaries but to geographic patterns of economic interdependence. For regions, the changes in the nature of competitiveness have led to greater volatility, to visible evidence of "creative destruction" across the map. As some U.S. industry segments become less competitive in world markets, certain regions suffer greatly. For instance, in recent years, many areas dependent on declining industries, such as textiles, steel and natural resources extraction, have experienced significant economic distress.

With advances in communications and transportation, firms are no longer restricted in their choice of locations. Many firms site each distinct function in a locale appropriate to that function. Headquarters, research, production and service can be in separate regions, even countries. Moreover, location decisions are not considered permanent.

Technological innovation is a primary driver of economic development, regionally and nationally. However, success in business and in economic development requires innovation in areas beyond technology. This process represents the act of making purposeful, strategic changes that lead to greater value added and productivity, whether in business, education or government. Innovation includes (but is not limited to): technology development, the creative applications of new technologies developed elsewhere, more effective approaches to workforce development, new ways of relating within and across organizations, and thoughtful shaping of industrial infrastructure. It can lead to a series of incremental improvements that add up over time, and it can also result in rapid, radical change. It may involve the creation of a whole new way of doing things, or the creative adaptation of a model used elsewhere. Successful innovation brings together and integrates creative ideas from various realms of technology, workforce, and organizational development, from within and across organizations. Thus, a focus on technology alone is insufficient for competitiveness.[4]

The Importance of Place in the Technology-Driven World

Certainly, some operations move to take advantage of lower costs, often offshore. Firms that compete on the basis of value now locate in places with characteristics that enhance creativity, speed and flexibility — the building blocks of value. Michael Porter notes the local characteristics that influence competitiveness.

> *Location affects competitiveness through impacts on productivity and productivity growth. Competitive advantage in advanced industries is increasingly determined by differential knowledge, skills and rates of innovation, which are embodied in skilled people and organizational routines. The process of creating skills and the important influences on the rate of improvement and innovation are intensely local.*[5]

3 See **Appendix A** for further discussion on the nature of changing markets and the effect of these changes on business operations.

4 This paragraph draws on the work of Peter Drucker.

5 Michael Porter, "Clusters and Competition," *On Competition*, Harvard Business Review: Boston, 1998, pps. 197-288.

An area's unique local characteristics support the development of regional industry clusters.[6] However, as recent history demonstrates, patterns of regional dominance in individual industries are not static. In light of market volatility and firm mobility, regions cannot take the stability of their collection of key industries (economic base) for granted. To maintain economic health, regions must provide the conditions that encourage firms to locate, cluster, thrive and evolve. What are some of these conditions?

Substantial differences exist between one region's economy and the next, both in terms of the mix of industries and their value added, their ability to generate regional income. The following table illustrates this range.

	San Jose, CA	Cleveland, OH	Orlando, FL	Merced, CA
Average annual wage (1999)	$61,110	$33,437	$28,781	$23,502
Metro rank	1	42	133	287
Dominant industry	Advanced technology manufacturing and services	Traditional durables manufacturing	Tourism and retirement	Farming and food processing

Despite these differences, increased wealth creation through innovation is possible in any region. At issue is the ability of a region to successfully transform and reinvent itself. While nearly every region has shown growth in real income, some regions have demonstrated a greater capacity to transform and reinvent themselves than have others in the face of a changing, highly competitive economy, as the following table suggests.

Average Annual Pay per Job as a Percent of U.S. Metro Average	1980	1990	1999
Real average annual pay (1999$), U.S. metro areas	$27,342	$29,883	$34,868
Moving Up:			
San Jose, CA	113.2%	131.1%	175.3%
Austin, TX	84.9%	89.6%	111.6%
Boston, MA	97.2%	115.5%	117.3%
Downturns and Upturns:			
Seattle, WA	124.9%	110.8%	126.0%
Detroit, MI	123.0%	113.1%	117.1%
Louisville, KY	95.2%	86.6%	87.4%
Losing ground to others:			
Indianapolis, IN	109.5%	99.4%	96.5%
Cleveland, OH	106.8%	100.3%	95.9%
Pittsburgh, PA	106.2%	96.5%	94.8%
Ft. Collins, CO	96.2%	88.9%	86.1%
Eau Claire, WI	83.5%	76.6%	72.6%
El Paso, TX	77.3%	72.2%	69.6%

6 Michael Porter's theory of clusters is foundational to understanding clusters and the role of cluster dynamics in regions. He defines a cluster as "a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalties and complementarities." Porter, Michael, *On Competition*, Harvard Business Review: Boston, 1998, p. 199.

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Every region, whatever its circumstances, can increase regional income and value added per worker through the development and application of innovative technologies that produce better, more cost-effective products and services in new and existing industries. Innovation-led development suggests that *how* a region makes use of what it has becomes, in many ways, more important than the initial ingredients with which it starts. Regions, like companies, need to innovate to remain competitive. Here are just a few examples of this process in practice:

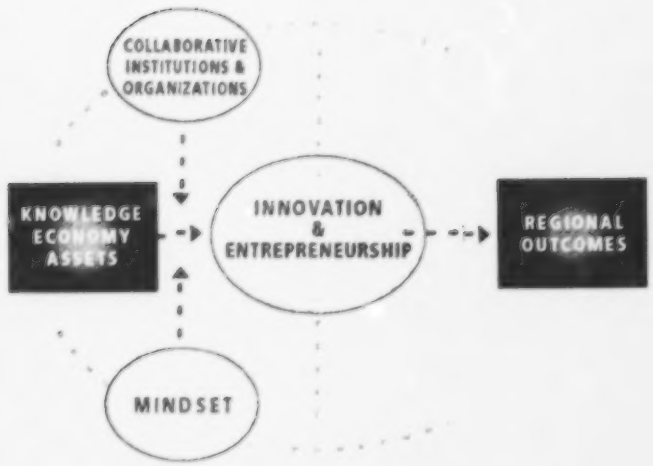
- The Fresno, CA, incubator program has applied electronic commerce technology to connect small and dispersed, independent suppliers, mainly in plastics and metal working, to larger buyers. This technology-driven aggregation of supply to match larger demand allows smaller players access to a game to which they were completely shut out. This type of approach presents great promise for connecting small and often isolated suppliers in rural or depressed areas to larger markets.
- With the assistance of the state government, communities across Arizona are using Internet-based technology to provide better and more efficient government services. Business and private residents are interacting increasingly online with the state and local governments through these mechanisms.
- A new generation of Pittsburgh economic development thinking has resulted in the creation of an organization called Innovation Works, which links entrepreneurs to inventors, financiers and business services. This networking facilitation function is aided by technology but is based on the importance of face-to-face relationship building.

The capacity to innovate is not just for technology hot spots like Boston, Austin and Silicon Valley. It is relevant to any region that sees the importance of building the capacity for continuous reinvention, which is needed to keep pace in today's rapidly changing world. Since no community — rural or urban — is immune from the forces of the global economy, it is important to explore the different ways to build this capacity. What are the building blocks of the regional capacity to innovate?

Innovation-Led Development in the Technology-Driven World

Research and experience both reveal that regions with successful, technology-intensive economies approach development in similar ways. Innovation-led development, which focuses on the creation of value, has four critical elements. Illustrated below, these elements include basic ***knowledge economy assets,*** such as workforce skills, knowledge and research development, creativity, advanced telecommunications infrastructure, quality of place and financial capital. Regions may have different amounts of assets, but ***every*** region has basic knowledge economy assets or the ability to identify and cultivate them. These assets are developed in many diverse parts of a region, including university classrooms, venture capital offices, community colleges, boardrooms, fledgling startup companies as well as individual families and their aspirations.

7 See **Appendix A** for a discussion of the term knowledge economy.



Knowledge economy assets are turned into results when a dynamic environment for ***innovation and entrepreneurship*** is in place. This technological dynamism includes new product and services development, technology commercialization or adoption, new business formation as well as business closures, and productivity growth.

To turn assets into outcomes for people and place in the knowledge economy, the process of innovation requires collaboration across boundaries, both geographical and functional. In an effort to create sustainable economic opportunity for a region, leaders from businesses, universities and state governments may need to find ways to collaborate across functional and sector boundaries. Communities can also collaborate across geographic borders. For example, a rural area with small cities and towns might band together with others to create a shared business services center for entrepreneurs that could not be sustained by any one geographic jurisdiction.

In the knowledge economy, ***organizations collaborate to compete***. People realize greater gains by moving beyond more narrow competitive positions through collaboration with their immediate competitors, whether these are teaching institutions or businesses. This is not an easy thing to do. People, organizations and places need ways to collaborate across the traditional boundaries of business or town lines that often separate them. They need tools, mechanisms and institutions.

The presence of ***collaborative institutions and organizations***, such as cluster organizations, professional networks, research-industry consortia and entrepreneurial support networks, greatly facilitates this environment. These alliances, networks and other relationship-building mechanisms create connections and linkages vital to economic development in a technology-driven world. Importantly, these relationships are not a given. For example, many regions fortunate enough to have university research assets underuse these knowledge economy resources, precisely because relationships have not been established to connect the university and local industry. In many important ways, the process of innovation is socially- and place-based. Relationships matter.

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Oftentimes, collaborative organizations and institutions reflect regional values and attitudes. Because ***regional mindset*** is an intangible, it is often overlooked, despite its significant implications for regional development. Just as a mindset affects the actions of individuals, it has important effects on actions and approaches taken in a region.

It is essential for a region to have a mindset that "gives permission" and encourages people and regions to be innovative and entrepreneurial. A culture of innovation rewards and encourages innovators and entrepreneurs, and it contributes to economic as well as community innovation. Regions that are permeated by a risk-averse culture have a harder time with innovation-led development.

Mindset can and often does affect issues as basic as defining and prioritizing a region's core assets. This can be seen in the investments a region makes in its economic development. A region could decide that natural raw resources are its greatest asset, rather than its people, and make investments that represent real trade-offs, e.g., tax breaks or subsidies for coal mines versus the technological readiness of schools. Without question, these intangibles can have a strong impact on policy-making and investment decisions in a region. Perceptions matter. They can be a powerful barrier to change, or conversely, they can be the strongest catalyst for change.

Putting Your Assets to Work (Whatever They Might Be)

Innovation and entrepreneurship draw on knowledge economy assets and collaborative institutions and organizations; they are also supported by a risk-taking culture and by creative attitudes. In today's economy, the web of connections spun by these attitudes, institutions and assets help to support entrepreneurial and innovative activity, as people and ideas can flow easily between businesses and other organizations.

A region can have many different kinds of assets to produce strong outcomes. For example, a region does not have to invent technology to apply it. It does not even have to commercialize technology to realize economic results. In some areas, very little research and development work, yet they have technologically advanced manufacturing facilities or are using technology as a tool to create scale and efficiency in an industry area challenged by dispersion and/or average company size.

An Illustration: Aggregating Supply to Meet Demand with Technology in the Central Valley

Large-scale, export-oriented producers in California's Central Valley food- and nonfood- related industries have been outgrowing the local suppliers of the Valley. Suppliers have two choices: (1) grow their own businesses significantly, which many do not want to do or cannot do or (2) partner to aggregate supply and meet large-scale producer demand. A new e-commerce server run by California State University-Fresno's University Business Center at the Central Valley Business Incubator links suppliers with each other and with producers, acting as an "infomediary." The Outsourcing Data Bank Program has proved to be an invaluable tool for enhancing buyer-supplier relationships. This program seeks to have an impact on the more than 35% of non-critical supplies available from local suppliers but currently purchased outside the Central Valley. The program also advises suppliers on how to interact successfully with large-scale producers, seeking to reduce the risk to large-scale producers, and increase the benefits to smaller-scale suppliers. Additional benefits to local firms include cost reductions as a result of lower transportation and inventory costs, greater ability to work with the supplier on customizing supplies, use of just-in-time systems, and increased opportunities to borrow capital.[8]

Some regions have a stronger "knowledge generation" infrastructure. They tend to do a significant amount of research and development, and often are associated with the presence of universities, laboratories, and other research facilities. This idea generation can be an important regional source of innovation, but regions without this asset can certainly develop relationships with others that do. Moreover, having these assets is no guarantee that all of this knowledge generation will ever have any economic impact. The incubation of knowledge and ideas and its commercialization are not a given. That is why this guidebook places such a strong emphasis on applications, rather than inventions.

Building Regional Capacity for Innovation

The only certainty about the future is its unpredictability. A well-positioned region will build its capacity to adjust continually to new circumstances. To be successful, economic development practice must incorporate the creativity, flexibility and speed that are required for a region's success in today's economy.

A region builds its capacity for economic development by focusing on the following areas:

1. **Support and help mobilize facilitators — people, institutions and organizations. Build networks.**
   Universities, economic development practitioners, industry associations, government agencies, chambers of commerce, and community development foundations all need to support and help develop networks and other opportunities for people and organizations to exchange knowledge and ideas and work together on shared challenges and opportunities.

8 Visit www.cdbonline.com for information about the Outsourcing Data Bank Program.

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2. **Invest in assets.**
   Keeping your eye on the big picture to create value means making certain types of investments and knowing that these are long-term commitments. Investing in assets some of the time will not work. Episodic investment does not work. ***The most important asset in a technology-driven economy is people.***
3. **Seek to catalyze innovation and entrepreneurship.**
   Innovation and entrepreneurship require focused support for the following activities: idea generation; incubation; commercialization and application of new technologies; and new business formation and growth.
4. **Foster an innovative mindset and entrepreneurial culture.**
   A region needs to cultivate a "culture" that supports innovation and entrepreneurship, one that can view failure as a lesson in how to succeed. Such a culture encourages risk-taking, and it values and helps build the infrastructure necessary to support the development of new products, processes and services and new business formation.

In **Chapter Two**, the guidebook examines three very different regions, and how each successfully builds capacity for innovation-led development in the technology-driven world.

CHAPTER TWO: Three Cases of Regional Reinvention

This chapter tells the stories of three very different regions that have reinvented themselves in the new technology-driven world of the knowledge economy. Austin, TX, was home to state government, a university, a few manufacturers, and not much else. Louisville, KY, was a branch-plant economy in the midst of a major recession. Tupelo, MS, was one of the poorest regions in the country.

Though very different in character, these regions share the basics of an approach to regional reinvention. They rely on very similar processes of strategic planning and implementation that are bringing about substantial economic benefits – and are also providing the foundation for maintaining a strong economy in the face of an unknown future.

In particular, these regions each focus their strategic approaches on the main elements of innovation-led development. Their stories reveal sustained efforts to develop and leverage ***knowledge-based assets*** through ***innovation*** and ***entrepreneurship*** in a technology-driven world. Each of their experiences shows a common belief in the importance of connection and collaboration, which is expressed in the creation of ***collaborative institutions and organizations*** in order to achieve regional goals. Each region shows evidence of taking seriously the fact that ***mindset*** and attitudes are important catalysts of change, and this is often embodied in a ***collaborative leadership style*** that links a "top-down" with a "bottom-up" approach.

Louisville

In the early 1980s, Louisville had been in the midst of a "smokestack" recession. For decades, the area's economy had grown by attracting manufacturing branch plants with plentiful low-cost, hard working labor. Companies like General Electric and Ford built large facilities. By 1974, manufacturing provided the region with 124,000 jobs and 36 percent of work earnings.

However, the combination of back-to-back recessions and Asian competition resulted in a severe decline in local manufacturing activity. By 1983, the number of manufacturing jobs had dropped to 86,000. The total number of jobs in the region had fallen by five percent, and Louisville, like the rest of the country, was still recovering from the severe 1981-1982 recession.

In response to this crisis, the Louisville Chamber of Commerce sought to diversify the region's economy to include two new activities that fit its competitive strengths — air freight and back office/call center operations. In 1988, a new seven-county development group, the Greater Louisville Partnership, took over responsibility for business attraction.

By all accounts, the region succeeded quite well with its aims. Because of Louisville's geographically central location, United Parcel Service had a major operations hub. A large number of back office processing and call center facilities moved to the region. Manufacturing jobs not only stabilized, they grew 3 percent. In turn, by 1995, unemployment had dropped to 4.4 percent, well below the U.S. figure of 5.6 percent. The impact of these activities could be seen in the region's per capita income, which had jumped from 94 percent of the national figure in 1985 to 102 percent in 1995.

But the leadership at the Partnership had cause for concern. Though it had helped to successfully diversify the regional economy, the region was still very much tied to a branch-plant economy. Louisville was at the mercy of outside forces, its population growth was tepid (up 4 percent in 10

years), and it had a very small entrepreneurial base. Because of their continuing concern, the Partnership asked an outside consultant to assess the region's economy. In interviews, the consultant found a large gap between where the region was and where its leaders wanted it to be.

Doug Cobb, the newly installed chair of the Chamber, was one of those individuals who was concerned about the capacity of region to participate and flourish in the knowledge economy. A 37 year-old Louisville native and co-author of *Using Lotus 1-2-3*, Cobb already had developed and sold a publishing firm and started a venture capital firm. Given his background, he was concerned that ***entrepreneurship*** did not have a place on the region's current economic development agenda. He believed strongly that there was a "need to be more focused on growing our own jobs [rather] than on attracting them from the outside."

Cobb was worried that Louisville's ***mindset*** — one that tended to be satisfied with the present and avoid risk — would limit future growth and perhaps place recent hard-won gains in jeopardy. The notion of ***innovation***, he realized, did not come easy to a tradition-oriented place like Louisville. He recognized that the region's future depended on the extent to which innovation — in technology, in logistics, in economic development and in government — took place.

Cobb was strongly encouraged by Robert Taylor, the dean of the University of Louisville Business School. Cobb had the Chamber undertake an analysis of entrepreneurial activity in Louisville compared to other regions. What Cobb found was disconcerting: "Given the importance of growth companies as engines of job creation and wealth production, our weakness in entrepreneurship is a serious problem." Louisville was a city with little tradition of business development.

On the basis of the findings of these two 1996 reports, the Partnership and the Chamber convened a region-wide collaborative "visioning" process, involving hundreds of local executives from the private and public sectors. The Chamber provided the staff for the effort, which was structured around subcommittees focused on key themes such as target industries, entrepreneurship, workforce and education, regional governance and organization for economic development. As the consultant's report had been criticized for being too focused on the city of Louisville, the Partnership and the Chamber took care to fully include all seven counties in the metro bi-state region, including those in southern Indiana. The leaders truly wanted a regional vision.

The Partnership and Chamber staff were able to work smoothly together, in part because they were located in the same building. Turf was not an issue, as the area's largest businesses belonged to the Partnership, while the Chamber represented the smaller ones. Visioning participants included executives from all levels of large corporations, small and medium-sized business owners, and representatives from regional colleges and universities. People were thrilled to participate, because they recognized they had a stake in the future of Louisville. And, the Chamber's strong leadership development program had provided a foundation of ready participants for this visioning process.

Moreover, participants were attracted by the novelty of being asked. Louisville, like many other older cities, had been run for decades by a small, closed dynasty of elite families. That dynasty had been invested in keeping Louisville small and manageable. It was a culture of isolation, a "country club mentality," as one observer put it. However, that dynasty had dissolved through death and buyouts. New leaders were emerging from the community and local businesses. The crisis of the 1980s brought a new core of leadership to the forefront. The visioning process also allowed hundreds of creative, con-

cerned people across the community to become involved As one regional leader explained, people got involved because they were asked. They saw they had something at stake, cared about Louisville, and agreed to participate out of the sheer novelty of having been asked. Under Louisville's old power structure, they were never asked.

One attribute of Louisville's culture – being a "relationship" town – proved very valuable in encouraging collaboration. As one observer said: "You have disagreements, but it doesn't get personal or ugly, so you are able to have fights and sit down the next day and do deals. We all have to live with each other, and there is a cultural emphasis on getting along. Our culture enabled cooperation in the visioning process."

The final report of the Visioning Task Force was published in August 1997. As its title suggests, the report was not an "actionable" document, as one participant put it, but rather a framework or an overlay within which those assigned implementation responsibilities could prepare a business plan that was "actionable and accountable." Implementation is a decentralized process, with subgroup leaders given substantial responsibility.

The Task Force laid out an overarching vision and goal that was radically different from anything that Louisville was or had ever tried to be:

> ***Vision:*** *By 2010, Greater Louisville will become one of the most competitive locations for business in the central United States. This will be achieved by creating a business climate and quality of life that nurture and attract high-growth companies — firms whose founders or top officials are principally based within the region, and whose employees include a significant proportion of professional, technical and managerial jobs.*
>
> ***Goal:*** *Strengthen the quality of life for residents of Greater Louisville by achieving a per capita income that represents 110 percent of the national average by 2010.*

The Task Force then outlined a roadmap to achieve the vision and goal. The roadmap was thorough in its coverage of the elements of an innovation-based economy. The region chose to "intensely focus" on two target industries in which it could excel — logistics/distribution and biomedical. Consistent with Cobb and Taylor's view, the plan called for a "community . . . permeated with a culture of entrepreneurism." Special emphasis was placed on ensuring African-American participation in economic growth and entrepreneurship.

Investing in assets, including the region's workforce, physical infrastructure, and the University of Louisville (particularly biomedicine, logistics/distribution, technology-based learning, and entrepreneurship) were explicitly recognized as keys to ensuring success. In its implementation, the visioning document called for accountability and benchmarking: "We must continually place the community and its economy under a microscope." Moreover, the report called for the creation of one organization to manage all aspects of the implementation process, not the three that currently existed. In addition, it recognized that the plan must be regularly updated "on a revolving basis."

With the vision and roadmap in hand, implementation has been moving very quickly and aggressively. Within weeks of the publication of the report, the Partnership and the Chamber merged to form Greater Louisville, Inc. (GLI). The city and county executives were added to the board. A year later, the city/county development agency, which had responsibility for business retention, was merged into GLI.

There is now one single voice for development in the region. Because of the goodwill generated by the report process, fundraising to support GLI has gone very well. Early-year budgets were $8 million, rising to $12 million afterwards.

GLI is structured as a "forum" organization, a center for informal coordination among decentralized implementation units. GLI manages a Business Networks Program, creating cluster-specific ***collaborative organizations*** in health enterprises, transportation and trucking, information technology and food processing. The network model underlying this program required that cluster members take the lead in developing their cluster's vision and roadmap, with staff support. The aim is for each network to be spun off into an independent non-profit organization. A printing network has already been spun off.

In a few short years, Louisville has made great strides in promoting ***entrepreneurship***. GLI created Enterprise Louisville as a subsidiary to encourage entrepreneurship in general and stimulate advanced technology business development in particular. The University of Louisville Business School now has the second-ranked entrepreneurship program in the country (after University of Texas at Austin). Between 1996 and 1999, the region's local supply of venture capital climbed from $9 million to $150 million. GLI works with a network of 14 business support organizations to promote minority business development. And, the region's ranking as an entrepreneurial hotspot by *Inc.* magazine has gone from 74th in 1994 to 16th in 1999. "We've made a lot of progress as a community," Cobb said.

Enterprise Louisville's efforts are clearly paying off. In 1999, it worked with 51 new firms that opened in the region, creating 5,650 jobs. The presence of UPS is a major attraction for Internet companies that ship products. Private investors have created two "business accelerators" to invest in and manage technology startups. Enterprise Louisville, the city and other players are creating eMainUSA, a high-tech development district downtown. The University of Louisville has built an information technology incubator.

Louisville is actively promoting its two target industries: biomedical and logistics/distribution

- The Greater Louisville Health Enterprises Network was created by leaders of area health-sciences companies, colleges and governments. The University of Louisville and three teaching hospitals have formed the Louisville Medical Development Center Corporation with a mission to develop a health science business park and incubator downtown.
- Louisville now is the sixth largest cargo airport worldwide. UPS is in the processing of expanding its employment by 50 percent. The University of Louisville founded the Logistics and Distribution Institute in 1997, funded largely by the UPS Foundation. The Institute is considered a strong asset in building Louisville's competitiveness in the logistics and distribution field.

The University of Louisville is undergoing a large capital campaign, with the bulk of the money going into two areas of high interest to GLI, medical sciences and entrepreneurship.

Louisville is not resting on its laurels. Each GLI working group is responsible for creating metrics that can measure and evaluate accomplishments to date. GLI is constantly on the lookout for ways to improve its approach. For instance, it is sending 120 business and government leaders to Austin to study that region's approach to development. It is also part of a group of nine Southeast chambers of commerce studying each other's approach to development.

A palpable excitement exists in Louisville today, an excitement that a new, inclusive community is being created that is providing greater economic opportunity for all. Since the Visioning Report was created, the Louisville economy has perked right along, with the number of jobs up eight percent in three years, and unemployment down to just above three percent. Everyone agrees that the best seems yet to come – that the full results of the implementation of the Visioning Report are still ahead.

Austin*

Between 1989 and 1999, the number of jobs in the Texas state capital region climbed from 490,000 to over 800,000, an average growth rate of over 5 percent a year. The unemployment rate has not moved above 3 percent for the last two years, and periodically dips below 2 percent. Per capita income has been growing over 6 percent annually. Thirty years ago, the region's per capita income was just 85 percent of the U.S. average; in 1998, the figure was 107 percent.

Once a sleepy college and state government town, with only 184,000 jobs in 1970, Austin is now a major force in the information technology industry, home to: Dell Computer, IBM, and Apple facilities; over 70 semiconductor manufacturers, including Motorola and AMD; and more than 600 software firms. Growth has been coming so fast and furious that a new order of business has become how to maintain Austin's highly valued quality of life. How did Austin go from zero to 60 so quickly?

The story begins three decades ago. While much of the rest of the country struggled with a difficult economy, the 1970s were a boom time for Austin. The number of jobs grew from 184,000 to 323,000. What was powering this expansion? The most important engine was public spending.

Home of state government and the University of Texas (UT), one of the nation's largest public universities, Austin saw a doubling of state employment during the decade. While other sectors — such as manufacturing, insurance, and health care — played important roles, the greatly increased flow of taxpayer dollars into Austin was the primary stimulus. Austin grew because, literally, it was a ward of the state.

Within this taxpayer-financed growth spurt, however, lay the seeds of the information technology industry that was to expand so greatly years later. Concerned about dependence on the public sector, the Austin Chamber of Commerce sought to diversify the economy with light manufacturing. In 1974, the Chamber recruited Motorola to come to Austin. They enticed them with access to well-trained engineers coming out of the university, a high quality of life, and a low cost of living. In 1979, AMD, a semiconductor manufacturer, followed.

The early 1980s brought more recruitment success; by then, Motorola built two manufacturing sites and four design centers. These years also brought uncertainty. What did Austin want to be when it grew up? Should Austin be content to be the government and university town it has always been, with a few branch plants added, or should it aspire to be something more?

In the early 1980s, two civic leaders initiated a process that provided the vision and the ***collaborative process*** that led to Austin's astounding success today. Lee Cooke, director of the Austin Chamber

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9 Information in this profile is drawn from Susan Engelking, "Austin's Economic Growth: A Case Study in Futuristic Planning," 1999; Helen Thorpe, "Austin, We Have a Problem," *New York Times Magazine*, August 20, 2000; Harvard Business School, "Austin, Texas: Building a High-tech Economy," Case 9-799-038, October 16, 1998; Deirdre Mendez, "The Development and Current Status of the Austin High-Technology Sector," March 2000; and Douglas Henton, John Melville, and Kimberly Walesh, *Grassroots Leaders for a New Economy*, San Francisco: Jossey-Bass, 1997.

and former manager of a Texas Instruments plant, believed that the factors that brought Motorola to town — university graduates and research, low cost of living, high quality of life — could bring many similar firms. The future he envisioned was in technology, and Austin seemed to have as much potential as any community, though this potential was largely untapped. In this, he convinced Pike Powers, an Austin attorney and executive assistant to Gov. Mark White.

The obstacles to their idea were significant. The regional ***mindset*** was not conducive to their vision. Many residents of the city, liking its laid-back demeanor and environmental beauty, were hostile to growth. The university was not a player in economic development. The number of technology companies was quite small, and oil and gas still dominated the mindset.

Cooke and Powers moved on two fronts. The first required fast action, and was an immediate test of their vision. The Microelectronics and Computer Technology Consortium (MCC), a new research consortium of 10 firms aimed at furthering the U.S. competitive position in computer technology, was looking for a home. Cooke and Powers understood that the region chosen as the home to MCC would not only get its research facilities and staff but also become a magnet for companies wanting to be near MCC.

One key asset in Austin's favor was the University of Texas, particularly its electrical engineering and computer science programs. Throughout the 1970s, UT invested in these departments to the point of national recognition. A major fund-raising effort at that time resulted in a number of newly endowed chairs in the two departments of particular interest to MCC.

For months, an ever-expanding circle of interested people met every morning at 7:30 to develop the MCC proposal, assess the competition, and then practice presenting "the pitch" and answering questions. "It was our first opportunity as a community to try to bring a consensus together," Powers explained. "We had a sense of mission, which helped us put our petty differences aside." Out of 57 cities under consideration, Austin won the competition. Practice, teamwork and investment in assets paid off.

The second front was strategic planning. While MCC was a time-limited opportunity requiring immediate attention, Cooke and Powers understood that Austin could transform itself into a knowledge economy city only through building consensus around a long-term vision for the region and the means for achieving that vision. The Austin Chamber retained the Stanford Research Institute (SRI) to conduct a strategic review of the Austin economy and develop a long-term plan for development. This plan, adopted in 1985, provided the vision for future action. The plan, *Creating an Opportunity Economy*, recognized that:

- the information technology industry would serve as the economic engine of the U.S.;
- Austin had the characteristics necessary to move from a branch-plant economy to a leading creative player in the information technology industry;
- once Austin became a leading player, it would serve as a magnet for more companies in the industry;
- while attraction activity may be important initially, entrepreneurship would ultimately determine the level of Austin's success; and
- quality of life was increasingly important to economic success, as knowledge workers would have great latitude in choosing where they would like to live.

Unusual for its time (and even for today), the plan was short and sketchy — the authors understood that because the future was unknown, the plan could only provide a framework for action, not the details. It was open-ended to allow for change over time, and it welcomed, instead of ignoring, the unknown. The unknown was seen as an opportunity to take advantage of when other regions are frozen by fear of risk and narrow thinking.

In the development of the plan, Cooke, Powers, and SRI were influenced by the thinking of Dr. George Kozmetsky, the former dean of the College of Business Administration at UT-Austin and the founder of the Innovation Creativity and Capital Institute (IC2 Institute). Kozmetsky, a co-founder of Teledyne in 1960, developed the "Technopolis Framework" as a guide to technology-based economic development. This framework had four key elements: achievement of scientific pre-eminence in technology-based research; development of new technologies for emerging industries; attraction of major technology companies; and creation of homegrown technology companies.[10] Kozmetsky described Austin as a place ripe to put his framework into action.

With the strategic plan in place, Austin's expanding body of civic entrepreneurs began to build and extend the ***collaborative leadership network***, an informal institution that provided the foundation for the region's astounding success. Their approach included the following:[11]

- recognizing that business has to move the process forward;
- organizing a small core of leaders to assume responsibility;
- creating a strong sense of mission;
- finding volunteer talent outside of traditional leadership positions;
- having persistence and patience;
- committing to multi-year effort, from planning to successful implementation;
- ensuring inclusion of a large and diverse number of participants; and
- acting as a team, with low ego and territoriality; and
- engaging with managers new to the community.

As Pike Powers put it: "[We went] beyond any normal economic development effort. We created ways for people to contribute to a larger sense of mission or purpose. It was pretty magical. From the start, we [told] them how much we need them and valued them. We set high expectations. We planned events and training to integrate new managers into our community. Most have responded very well."

While UT was a central asset to Austin's development vision, it was not always a willing participant. Peter Flawn, president through 1985, initially objected to the MCC effort as contrary to the school's mission, and in general was uninterested in an economic development role for the university. However, Flawn was succeeded by William Cunningham, who earlier had replaced Kozmetsky as the business school dean. Cunningham was an active civic entrepreneur who, in his words, "institutionalized" the school's willingness to be supportive of development activities.

10 Harvard Business School, "Austin, Texas: Building a High-tech Economy," Case 9-798-038, October 16, 1998.

11 Susan Engelking, Austin civic entrepreneur.

With ***collaborative institutions and leaders***, a shared ***mindset***, supportive of change; and ***key knowledge assets*** of the university and quality of life; Austin moved forward to implement its roadmap at a fast pace. In 1988, the region attracted SEMATECH, a 13-firm research consortium focused on semiconductor technology. An Advantage Austin recruitment effort led to a number of large information technology branch plants moving to the area, including those operated by Applied Materials, Cypress Semiconductors, and Samsung.

True to the vision of the plan, not all of the growth was based on attraction. Dell Computer, the area's largest private employer, was founded in Austin. A number of other startups spun out of UT and the area's local firms. For instance, 25 firms can be traced back to Tracor, the region's first technology firm, founded in 1955. National Instruments, a software firm that employs 1,000, was created by a UT electrical engineering alumnus. IC2 created the Austin Technology Incubator, which lays claim to over 47 graduate firms and 1,300 direct jobs. ***Entrepreneurship*** and ***innovation*** has been enabled by the presence of Austin Ventures, which now has $1.6 billion under management, and The Capital Network, a nonprofit angel network for seed capital.

Between 1987 and 1999, the number of manufacturing workers in the Austin region doubled, and the number of computer software workers grew even faster. At present, the high-technology industry directly provides 25 percent of all earnings in the Austin area, compared to only 8 percent from the once dominant state government sector. With a national research university, major consortia, design centers for Fortune 500 firms, and hundreds of high-tech startups, Austin is no longer the branch-plant economy it was in the 1980s. Now, it is a center for innovative applications of technology.

While Austin has moved forward with great speed, its technology-based development effort has never rested on its laurels. New collaborative networks have been created, such as the Austin Software Council. The Semiconductor Initiative for Austin has sought to increase the number of hardware startups to match the explosion in software startups. Under Cunningham's leadership, UT has been ranked in the top-10 list of engineering graduate schools in the United States since 1989. And, recognizing that the time was ripe to plan for the next phase of development, in 1998 the Greater Austin Chamber published a new strategic plan prepared by ICF Kaiser under the leadership of the same consultant who produced the 1985 study.

Continuity of leadership has been important to Austin's success. Most of the major players of the early 1980s remained active well into the 1990s. But, as the 1990s came to a close, Austin found itself facing a situation that every successful region faces, the challenge of renewal.

Leadership has undergone a major turnover. For instance, William Cunningham, the president of UT, resigned, as did the three top staff at the Greater Austin Chamber of Commerce. Austin's phenomenal physical growth is seen to be degrading the area's high quality of life. Success has brought urban sprawl, traffic congestion, and substantial increases in the cost of living. Many Austin residents not in the high-tech business, such as artists and schoolteachers, can no longer afford to live there. Executives at a large number of new technology firms perceive a lack of cohesion and consensus within Austin's tech community about Austin's future.

In 1999, these executives formed a new Austin initiative, the 360 Summit, which is a "grassroots effort designed to maintain Austin's quality of life as its technology community continues to grow. The 360 Summit seeks to build a region that utilizes innovation to ensure economic success and opportu-

nity while preserving a positive lifestyle for all its citizens." Peter Zandan, Austin business leader, and co-chair of the 360 Summit, said that the summit "is serving as a catalyst to affect change. …The momentum is still building, and our ultimate success will be measured by our ongoing commitment in making Austin a better place to live and do business."

Tupelo, Mississippi[12]

To tell the story of the Tupelo region (in northeast Mississippi), it is necessary to turn back the clock back more than 60 years. According to the U.S. Census of 1940, Lee County, in which Tupelo is located, was one of the poorest counties in the poorest state in the United States.

Lee County and Tupelo, its main town, possessed almost no competitive advantages. Its agricultural land was depleted and eroded. A single crop cotton focus often resulted in failure. Its people were mostly illiterate. The physical infrastructure connecting town and rural areas was abysmal. The county was geographically isolated, and there was little industry. Tupelo was nothing more than a "rural trading post."

Yet by the 1990s, Lee County was the second-wealthiest county in Mississippi, after Hinds County, the home of the state capital. Today, it has a diverse manufacturing base, it is home to the largest non-metropolitan medical center in the country, and it has a public school system consistently rated as one of the best in the nation. Its manufacturing sector has been growing approximately 1,000 jobs per year over the past 13 years, while its services sector has been growing 1,500 jobs per year over the same period.

The transformation of Lee County and northeast Mississippi is ongoing, but the radical changes from the 1930s to the present offer valuable lessons about innovation-led economic development. The region with few advantages was in so many ways ahead of its time in organizing for innovation-led change.

In the 1930s, having convinced local businesses that the future of the town's prosperity was tied to the future of its poorest rural farmers, George A. McLean, owner of the local newspaper, ignited a 70-year process from which many relevant strategic planning lessons can be drawn today. This ***catalytic leader*** helped to change a ***mindset*** by compelling residents to understand the logic of economic interdependence — that there are integral links between the city and rural areas, between the poorest and the most affluent, and between community health and economic growth. He helped to facilitate a process of change to which the region's success today can be traced.

McLean introduced a rationale, which held that the reversal of failing farms to export-oriented successes would, in turn, stimulate the local economy of this rural region. He persuaded the local hardware store owner that the latter would never do well as a local-serving business, unless those who shipped goods and services outside of the region were successful in bringing revenue back to the region, thereby increasing their purchasing power. With this approach, he convinced local businesses to invest in a dairy technology program. His ***application of technology*** (in this case artificial insemination for dairy cow breeding) also serves as an early example that rural regions can exploit new technologies without developing them locally.

12 This regional profile draws heavily from the work of Vaughn Grisham and Rob Gurwitt as well as interviews with community members of Lee County. We strongly encourage everyone who reads this guidebook to read Tupelo: *The Evolution of a Community*, Vaughn Grisham, as well as the case study written by Vaughn Grisham and Rob Gurwitt, *Hand in Hand Community and Economic Development in Tupelo*, The Aspen Institute.

This first effort built trust, a momentum of success and credibility for an integrated approach to economic development. Programs and initiatives, however, are just that; they do not have staying power. This is another important lesson of the Tupelo region's economic development. Economic development is unsustainable without ***collaborative institutions and organizations*** that provide a forum and structure for ongoing discussion, mobilization and action. Champions and individual leaders are very important, but institutions and organizations provide structure and sustainability.

In response to this need, rural development councils were formed as part of the web of networks facilitating the dairy program in rural areas. Not long after, community leaders in Tupelo formed the Community Development Foundation (CDF). It is noteworthy that this organization supplanted the Chamber of Commerce, which was thought not to be broadly representative of the region and to be guided by business interests, disconnected from community concerns. Membership in the dues-based CDF was and still is based on a sliding scale. Anyone can participate and so many do. One local leader commented that newcomers to Tupelo often remark about both the diversity and numbers of participants, from local farmers to the heads of corporations.

Over time, the CDF became the network of networks in northeast Mississippi, creating and spinning out many organizations and networks focused on an integrated approach to economic and community development. Examples include: the Community Relations Agency; LIFT, Inc.; Itawamba Community College; the University of Mississippi at Tupelo; the Lee County Council of Governments; the PALS literacy program; the National Model for Technical Career Development; the Entrepreneurs Forum; the Inventors Forum; the Natchez Trace Parkway Association; the Northeast Mississippi Economic Symposium; and Leadership Lee.[13]

The CDF, under McLean's leadership, made an important decision to reject a model of economic development that swept the South starting in the 1930s. This model, Balance Agriculture with Industry (BAWI), "provided tax exemptions and other subsidies as well as the lure of cheap and abundant labor." CDF recognized that economic diversification was needed and that industrial development was promising. But, it also understood that quality, higher-paying jobs could only be brought to Tupelo if there were skilled workers – and a quality of life in which those workers and companies would want to locate. For these reasons, "education remained the basic infrastructure for economic development" in the philosophy of this region. A "strong community, strong economy" approach led to the creation of more community-oriented organizations that would help to develop the region's assets, its "raw material" — its people. This form of indigenous development was opposite in approach to BAWI, and it resulted in the retention and attraction of value-added industry.

Among the diversified industrial base that evolved in the Tupelo region is a strong concentration in furniture manufacturing. This clustering effect led to spin-offs. In fact, 80 percent of the roughly 200 furniture factories around Tupelo today trace their origins to the first major furniture manufacturer, Futurion, which located in the area in 1951. Unlike some of the urban entrepreneurial hotspots, many of these spin-offs started in *barns*, not garages.

The region's choices of development tools were aligned well with its strategic planning approach. Tupelo developed incubators; it carefully located industrial parks; it developed programs for upgrading

13 *Hand in Hand: Community and Economic Development in Tupelo*, Vaughn Grisham and Rob Gurwitt, The Aspen Institute, 1999, p. 55.

existing businesses; it created technical training programs for incumbent workers and, very importantly, it made long-term ***investments in its human assets***. This can be seen in the creation of a worker-training program that evolved into a community college, as well as the addition of a University of Mississippi campus to the region. The university was viewed as a critical ingredient in the creation of the future of well-paying, quality jobs and economic growth in an increasingly knowledge-based economy. As early as 1970, George McLean predicted in *The Northeast Mississippi Daily Journal:* "The key to success in the next century is to treat every person as a resource and to develop that resource to the maximum."[14]

The University of Mississippi at Tupelo was sited next to the Itawamba Community College and linked by a resource center, funded by CREATE (Christian Research Education, Action, Technical Expertise), a community foundation founded by George McLean. CREATE was developed specifically to collect and administer the large funds that would be needed to properly invest in an educational system for the next century.[15]

Tupelo's success would not have been enduring had it not been the result of broad-based participation. Civic engagement has been the linchpin for Tupelo's successful economic transformation. Its premise has been that the vitality and strength of economy is directly linked to the strength and vitality of the community. "Economic development is a process, not a product," one Tupelo leader said, astutely. Another local leader said: "The consensus-building process is vital and must arise from the citizenry for it to take root. The public sector is an important partner, but it listens and acts as a partner for the initiatives that bubble up from the private sector."

Many in Tupelo increasingly recognize the fundamental truths of interdependence and how they are prerequisites for regional vitality. There is a continued focus on increasing awareness of the shared destiny that the well-off communities in the region have with those still not flourishing. In 1994, CREATE began an effort to build and strengthen ties in Northeast Mississippi that takes regional planning to the next level, following the same philosophy that motivated George McLean to seek funding from a local hardware store for his dairy program. Mike Clayborne, the director of CREATE, has developed an endowment strategy based on community matching to fund the development of regional leadership and strategic planning. Importantly, CREATE's "strategy" lies in building a model for working together — a process.

They do not need or want a master or comprehensive plan; the process itself changes plans. The important thing is to cultivate resource and leadership capacity. A strong model or successful demonstration project can be illustrative and stimulate other such models — one effort begets another. This approach captures the Tupelo region's institutional richness and flexibility. It explains why Tupelo continues to be able to anticipate, respond and regularly reinvent itself.

14 George McLean, as cited in *Tupelo: The Evolution of a Community*, Vaughn L. Grisham, Jr., Kettering Foundation Press, Dayton, Ohio, 1989.

15 George McLean willed the newspaper and its holdings to CREATE in order to ensure the newspaper's focus on community development, its continued ownership by the community, and to generate a funding stream for community development from private sources.

Some Lessons Learned

Each of the three cases is very different, yet they share some common themes. These include:

1) For a region to reach its potential, it has to imagine what it might be, even if that image is contrary to anything that has come before.

2) A good plan builds on existing strengths — as well as encouraging investment in new areas.

3) Visionary leaders with strong ties to the community are critical to success.

4) While leadership is a vital ingredient, collaborative institutions and organizations are needed to sustain development over time.

5) Widespread participation in the planning process leads to a strong sense of ownership of the results.

6) Moving quickly from planning to implementation greatly improves the prospects for success.

7) Success can bring a new set of challenges, which must be addressed with the same determination and collaboration as the original issues.

8) Developing a shared, similar mindset among participants is crucial for success. (It often starts as enlightened self-interest and evolves to a sense of community betterment

9) Economic development is a process, not a product.

Part One: Some Questions to Consider

Successful regions have the capacity to adjust continually to changing circumstances. These regions can identify and cultivate their assets, engage in collaborative processes, and they encourage a regional mindset that fosters such growth. What type of capacity does your region possess?

1. Resource decisions often are driven by economic development considerations. Is your region likely to choose investments in knowledge economy assets (e.g., investment in education and training, technology infrastructure, amenities, and tax credits for small company growth) over other possible economic development strategies (e.g., tax cuts to existing large employers, funding for business attraction programs)? What drives this decision-making process? Who are the decision-makers?

2. Do decision-makers in your region believe that advanced communications infrastructure is a prerequisite for full participation in the knowledge economy?

3. In many communities, economic development organizations commonly engage in turf battles that diminish the opportunity to collaborate effectively. Are there neutral facilitators who can effectively bring together economic development groups with different but potentially complementary missions to work in partnership?

4. Local businesses often see themselves as being so competitive that they can't envision themselves collaborating in order to take advantage of a regional opportunity or respond to a regional challenge. What kinds of forums, organizations and networks does your region have which can connect businesses and community leaders to one another, so that they can work together on shared opportunities and challenges?

5. In your region today, can you identify an opportunity – or a crisis – that may provide a path towards consensus and collaboration?
6. How are economic development practitioners evaluated in your region? According to the numbers of jobs they create through business attraction? Or, for their ability to convene, facilitate and sustain collaborative ventures by decision-makers and opinion leaders in the region?
7. What industries drive your regional economy? How are these industries interdependent? Do decision-makers and opinion leaders in you region understand the interdependent relationships?
8. The fastest-growing generators of jobs are companies with 50 employers or fewer. How many such companies are located in your region? Are your economic development policies and practices tailored to large corporations (e.g., taxes, attraction model) or to smaller businesses? Do the economic development leaders in your region understand the different needs of emerging and established industries in your region?

Part Two

CHAPTER THREE: Building the Team: Balancing Leadership, Civic Participation and Expertise

Introduction

Before moving into the "how to" of the strategic planning process itself (discussed in **Chapter Four**), it is important to consider the new balance of players in innovation-led development. The right constellation of leaders is essential for initiating and sustaining a strategic planning process.[16] This section focuses on the nature of leadership, civic participation and expertise in innovation-led strategic planning. Who participates in strategic planning and why? What are different ways to engage broad civic participation? This chapter explores some of these questions.

The Roles of Leadership, Civic Participation, and Expertise

Innovation-led development is more complex because of the way in which the execution of each element of the process must always balance three issues. Whether in an initiation, framing or a mobilization phase, good strategic planning involves carefully balancing leadership, civic participation and expertise. A strategic planning process can be overwhelmed by any of these elements at any given point.

Processes that are too expert-heavy lose the understanding of the broader public and the interest of leadership. Processes that are too leadership-heavy lose a sense of shared mission with the broader public. Processes that are too participation-heavy tend to become unmanageable.

Collaborative Regional Leadership: An Overview

The most important quality for economic development is committed, creative collaborative leadership. Practitioners in successful regions around the country — including our introductory examples of Austin, Louisville and Tupelo — have said that the tipping point for success is collaborative leadership. How does such leadership get cultivated? Knowing how to build a leadership team that represents the breadth and diversity of the region is crucial.

16 Doug Henton, John Melville, Kim Walesh, *Grassroots Leaders for a New Economy*, San Francisco: Jossey-Bass, 1997.

Gathering only the "usual suspects" to plan the future of a place is no longer effective or defensible. Economic development practitioners and the "old boys" network are too narrow a group to sustain regional outcomes. The chamber, banker, Realtor and large company corporate leader are no longer enough of a team to lead regional growth. They are certainly still important players, but more are needed.

People are needed from all walks of life, whether they are chairs of corporate boards, community activists, community college deans, smaller business entrepreneurs, university presidents, chamber heads, environmentalists, Realtors or corporate heads. All successful collaborative leaders have important characteristics in common. They are "civic entrepreneurs." A civic entrepreneur is "the catalyst for building relationships between the economy and the community to promote economic vitality and community quality of life." Civic entrepreneurs embody two great American traditions — individual entrepreneurship and community action.

Key Leadership Characteristics

How do you know when you have a civic entrepreneur or collaborative leader? These leaders:

- See opportunity;
- Have an entrepreneurial personality;
- Are boundary crossers;
- Are trusted as credible intermediaries; and
- Work in teams.

Collaborative leaders ***see opportunity*** in the knowledge economy. They recognize new forces at work, from increased competition and global markets to demographic changes that affect the makeup of their region. They see the interdependencies that connect a vital community with a strong economy and, consequently, understand that regional choice matters.

These individuals tend to ***have an entrepreneurial personality***. They see opportunities and know how to leverage them. Importantly, they are persistent — they do not take "no" for an answer. Collaborative leaders are able to strike a balance between being visionary and following through to produce results.

They ***are boundary crossers***, willing to challenge political, functional and geographic barriers that separate people. They overcome barriers of too much government, too much business, cultures of blame, absentee ownership of major employers, and a legacy of poor process. They think win-win, not zero-sum, and they are willing to take risks and push for change.

Because they practice inclusion, and they demand a sharing of both responsibility and results, collaborative leaders ***are trusted as credible intermediaries***. They check their ideology at the door; they are motivated to achieve broad, long-term interests.

Finally, collaborative leaders always ***work in teams***. Not only do they seek out complementary partners, they also lift up new leaders. These leaders share credit widely and tend to provide continuity over the long term.

Collaborative leaders share these traits, but they all have different strengths. Their ability to complement the team increases the likelihood of moving from initiating a process through successful implementation.

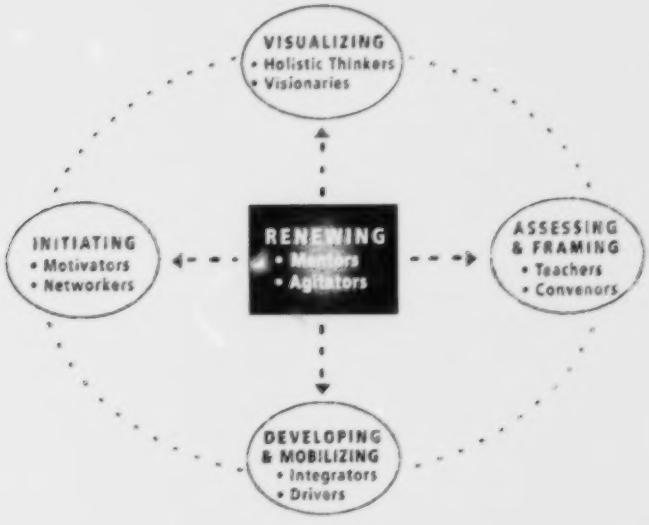
An Illustration: Leadership in the Shenandoah Valley

In the mid-1990s, John Noftsinger was director of continuing education at James Madison University (JMU), a public university located in the rural Shenandoah Valley in western Virginia. As regional technology councils were being formed in technology centers around the state, Noftsinger saw the opportunity to do the same in the Valley. Each of the state's universities had been mandated to become more involved in economic development. As JMU's economic development contact, Noftsinger led the effort to create a five-county Shenandoah Valley Technology Council "promoting, encouraging and enhancing technology-based business development as a complement to the Valley's natural resources." Noftsinger, now JMU Vice President for Research and Innovation, is chairman of the board of the 100-member organization.

Strengths Required to Sustain a Strategic Planning Process from Initiation through Implementation

At different stages of an effective planning process, collaborative leaders play different roles, based on their different strengths. The following chart illustrates the roles and associated strengths for each element in a strategic planning process.

KEY ROLES PLAYED BY COLLABORATIVE LEADERS



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It is rare to find someone with all of these strengths, and when one does, it is difficult to engage them all of the time. The roles listed under each of the strategic planning elements need to be filled for the process to be successful. It is essential to recognize that an effective team is not one made up of all motivators or networkers or all integrators.

Often, in the analysis of a team, it becomes clear that there are too many visionaries and motivators and not enough convenors or integrators.

Does the team that you are building have some people with each of these strengths?

Civic Engagement

For a strategic planning process to work, it needs to have broad buy-in and participation from the community. This can be accomplished at different stages of the process in numerous ways. It is important to remember that including people early on and gaining feedback is vital for a process to yield sustainable results. How many regions have been extremely successful in marketing themselves outside of the region, but do not have the buy-in of the residents within the region? This invariably evolves into roadblocks against change.

At the same time, civic participation needs to be manageable in order to keep a planning process moving forward. The following table lists some tools for mobilizing civic engagement and when it is helpful to use them in the strategic planning process.

	Initiating	Visualizing	Assessing	Framing	Developing	Mobilizing
Focus Groups	✓	✓				
Written and Phone Surveys		✓	✓	✓		
Public Forums	✓	✓				✓
Communications (public service announcements, etc.)	✓					✓
Town Hall Meetings (virtual and live)		✓		✓		✓
Charettes	✓	✓				
GIS Mapping			✓			
Visual Preference Contests		✓				
Written Reports			✓			
Conferences, Workshops	✓	✓		✓	✓	✓

More detailed information on these methods will be discussed throughout the sections that follow.

Both leadership cultivation and civic participation are not just discrete elements of the strategic planning process; rather, they undergird the entire process. While leadership and civic participation are the foundation for a successful strategic planning process from beginning to end, the role of expertise is more targeted. This represents an important change in the responsibility that regions need to take for planning their future.

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INNOVATION-LED STRATEGIC PLANNING

Expertise

The role of expertise is vital in the strategic planning process. It can provide valuable insights and information to a process, but should not be substituted for the process, itself. Throughout the sections to follow, we will caution about putting experts on a pedestal.

Engaging expertise can be looked at as an opportunity to build local capacity. Projects, though perhaps guided in part by technical expertise, still require joint responsibility, particularly if the expertise is coming from an external player. There are many possibilities for productive collaboration and shared learning.

Expert outputs and deliverables, particularly written ones, need to be easily understood and designed to engage, not put off.

Strategic planning that relies solely on professional staff cannot be fully effective as a process that engages both economic and community players. At the same time, professional development practitioners play a new and very important role in facilitating and providing staff support for the involvement of leaders and volunteers in the strategic planning process.

In innovative regions, the strategic planning process produces far more than a vision and a roadmap. Through the teamwork of regional leaders, volunteers and staff, the process also produces a common sense of purpose, new and stronger relationships, mutual trust and commitment to action. The process is consciously structured to produce these benefits over the longer term.

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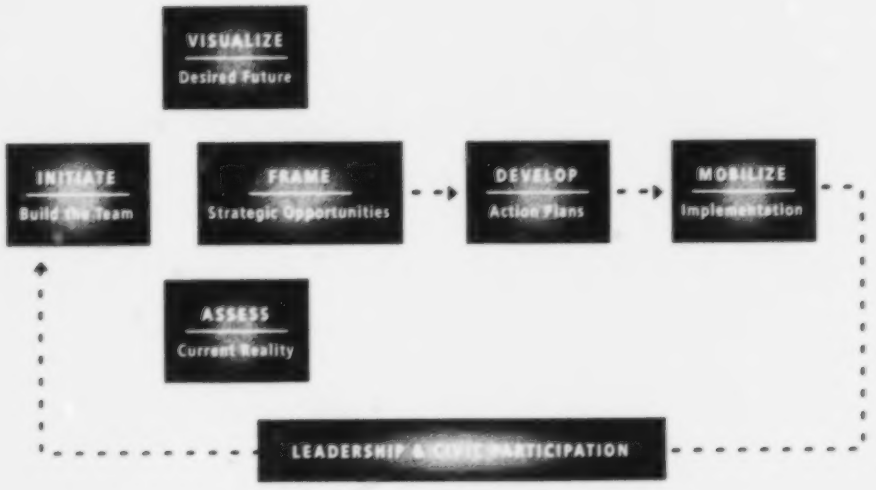
Chapter Four: The "How-To's" of Innovation-Led Strategic Planning

Introduction

This chapter explores the key elements of the strategic planning process. It draws on the process lessons that were shared by the interviewees, as well as the collective experience of the authors of this report.

Strategic planning in the knowledge economy includes seven central elements. The balancing of leadership, participation and expertise described in the previous chapter applies to each element of the planning process.

ELEMENTS OF INNOVATION-LED STRATEGIC PLANNING PROCESS



The section that follows explores each element of the innovation-led strategic planning process, highlighting key aspects of the element, providing advice on how to initiate the element, and offering a brief regional illustration.

Building the Team: How To Initiate

The central task of the initiation phase is to build the team that will develop and guide the strategic planning process. This element is the single most important component of the strategic planning process. During this phase, leadership teams typically determine how to rally broader involvement, learn about best practices and design a process that will work in that region. Many leadership groups also wrestle with how to define their region.

Creating a team is an inclusive, relationship-building process. While there are similarities in successful approaches, experience suggests that each region needs to define a process that fits with its particular circumstances.

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Getting Started

Go Beyond the Usual Suspects To Bring in New Civic Entrepreneurs

Successful regions form teams of people who come from diverse perspectives but share the traits of collaborative leaders or civic entrepreneurs. Typically, a small core team of leaders launches the recruiting process by reaching out to key colleagues and getting them to agree to participate. This group also reaches beyond their comfort zone to bring new people to the table.

It is helpful to begin with developing lists of the demand-driven organizations. These would include executives from industry cluster groups, entrepreneurs, business leadership (both emerging and established), and other community groups. On the supply side, it is important to identify stakeholders from government, education, economic development and foundations.

Identifying these organizations and people and bringing them together to engage in strategic planning can alleviate common problems with supply-side inertia. Many times, people will say that they would not have participated in a discussion about regional change had it not included new faces.

Identify the Rallying Cry to Bring in Others

The core group of leaders should be able to articulate why others should care about developing a strategy. Is there a catalytic event or threat? Is there a not-to-be-missed opportunity? Leaders create a sense of urgency and mission, and motivate others to step up and take responsibility for the community.

Identify Best Practices, and Design the Process

The initiation phase is also about learning from other communities. Leadership teams often try to get up to speed quickly about how other communities have gotten results and affected change. Techniques for accessing best practices include tapping the collective wisdom of the team, accessing expert resources, and interacting with leaders of other communities, including traveling to visit them.

An Illustration: The St. Louis Technology Gateway

Historically, St. Louis was a Fortune 500 town. Firms like Anheuser-Busch, McDonnell-Douglas, General Dynamics and Ralston-Purina dominated the economy, and their executives provided the region's leadership. But by the mid-1990s, with downsizing and takeovers, St. Louis had a leadership vacuum.

In 1997, the St. Louis Regional Chamber and Growth Association (RCGA) and the accounting firm of Deloitte & Touche cosponsored a "Fast 30" awards ceremony to recognize the fastest growing businesses in the region. Finding they had much in common, the CEOs from these diverse organizations decided to organize themselves as a loose network. At the same time, Bill Gates, Sr., the founder of a technology business alliance in Seattle, visited St. Louis. With the Seattle model in mind and the Fast 30 group in place, the idea of the St. Louis Regional Science and Technology Alliance (the Technology Gateway Alliance) was born.

RCGA president Richard Fleming was the catalyst for the Alliance. Four CEOs of the Fast 30 came forward as initial leaders. Fleming and these leaders organized a board of "movers and shakers" interested in "making things happen," a group that included high tech-business CEOs in life sciences and information technology, a Washington University department chair, and local venture capitalists.

The St. Louis Regional Science and Technology Alliance came into being in May 1998. The structure and function of the Alliance were designed after a thorough, on-site examination of best practices in other regions. In the spring of 1998, RCGA organized analyses of alliance operations in Seattle, Austin, Boston and other areas.

The best practice review led the RCGA and Alliance board to conclude that a volunteer-driven, relationship-based approach would lead to the greatest success, explained Barbara Bouchey, who recently retired as Director of the Alliance. Emphasis was placed on a broad inclusive outreach for membership. By 2000, the Alliance had 287 organizational members with more than 700 participants, and a very small staff that supports those members. The philosophy of the Alliance is bottom-up, bringing the bright, committed people together to identify what needs doing, and see that it gets done. The work of the Alliance is decentralized, carried out by volunteers in two industry networks (life sciences and information technology) and four working committees (workforce, capital, entrepreneurship and marketing).

The Alliance believes its foremost task is to broaden its volunteer base and build relationships. From its best practice analysis, it recognizes that organizing a critical mass of participants must come before formal planning; otherwise. "the plan is a top-down thing." So its efforts are focusing on formal educational and informal networking events. It has even started Metropolis, a social network of technical professionals under 30, to bring that group of creative people into the work of the Alliance.

Visualizing the Future: The How To's of the Visioning Process

Regional participants typically enter a next phase that focuses on understanding the desired future for the region and, at the same time as, coming to grips with its current reality.

An innovative region's vision grows through the development of a consensus among participants in the strategic planning process. It is normal for participants to have a range of desired futures. Common threads can often be found in these different views, and middle grounds can be established.

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The vision should be based in reality. Often, a region may try to recreate the past. This may translate into the belief that a steel mill will reopen in a Pennsylvania town, or that a paper mill, which has been slowly downsizing for a decade, will continue to employ a majority of a northern New England town. The vision of an innovative region needs to dispense with commonly held myths about how the local economy works and how it might work. Unrealistic beliefs can delay facing reality and investing in moving ahead. They can set a region back for a long period of time, as young people leave the region in search of real opportunity.

The vision should be forward-looking. At the same time, the vision should be achievable, a potential outgrowth of the region's current situation. While some regions do not want to leave the past, others have unrealistic visions of the future, thinking they can become a leading information technology or biotechnology center without understanding that they do not, and are not likely to, have the assets to do so.

Unbelievable visions undermine the legitimacy of the strategic planning effort and deter potential participants from joining. At the same time, the vision should require the region to extend itself. If a vision is easily achievable, it is likely that more can be achieved. An assertive and compelling vision will serve to mobilize potential participants, who will realize that the vision is indeed achievable, but only through hard work and collective action. And, many participants will seek to join the process because of the sense of community and achievement that can arise from working together to reach a difficult goal.

The visioning process, then, must be grounded in the facts of current reality that get established through a regional assessment. When a region does not take the important step to self-assess, it operates at the anecdotal level, which can be problematic. Information is very important, and most regions do not know themselves as well as they think they do. Often times, self-assessment and visioning can be done in tandem.

Information is not a substitute for commitment, leadership and just rolling your sleeves up to get involved. Some regions get caught in the *information equals action* fallacy. By itself, information does not lead to change. Without action, information can exacerbate hopelessness, frustration and finger pointing. Information is only productive in fertile contexts.

Getting Started

Identify Commonalties as Leaders Articulate a Desired Future

A first step to getting started is to have a leadership team that is representative of the broader community. Usually comprised of no more than 20 people, this team could begin a simple brainstorming process about the key elements that they think are important to a regional vision. This work could establish a framework for organizing the key elements of the vision, as well as specific vision themes.

Test Vision Themes with Broader Audience

The results of this session could then be tested with a broader audience and modified in an iterative process. This testing could occur at a regional "possibilities" conference or through a series of regional focus groups. The idea is to engage broader participation at the start and then take the key themes back to a core leadership group that works with these ideas to shape a vision.

The key is to reach out to stakeholders in order to understand their issues and gain their buy-in to the process. The following simple exercise can provide an initial structure for brainstorming elements of a vision.

An Exercise: Defining Current Reality and Desired Future

1. In three phrases or less, describe the current reality of your region today.

2. In three phrases or less, describe your region as you would like it to be five years from now. What is success?

An Illustration: Greater Washington, D.C., Visualizes Its Future

Different regions will have very different visions. These differences are tip-offs to differences in perceived identity and underlying values.

The Greater Washington, D.C., region has been engaging in an ambitious regional strategic planning process. A 5,000-square-mile area, this region has developed a vision to be "a world-class connected community," in which all residents have an opportunity to participate in their economy. The region has defined this vision through a series of "strategic commitments to: education and lifelong learning, innovation and entrepreneurship, inclusion, quality of life and regional thinking and action."

Over a two-year process, the region has used a regional collaboration structure called the Potomac Conference to convene hundreds of individuals to participate in defining its vision, commitments and action plans.

The Greater Washington Board of Trade has been an important facilitating organization, providing professionals to staff the conference as well as managing outside consultants to assist in four ways:

- Provide a core leadership group with best practices from other regions to help in their development of a regional vision;
- Facilitate focus groups sessions with hundreds of people to get their reactions to the core leadership group's draft vision statement;
- Integrate the civic feedback into revised language; and
- Suggest and develop progress measures that show how well the region is doing in achieving its strategic commitments.

This work does not have to be done by consultants. There are some advantages, however, that outside information consultants can bring – an outsider without vested interests can serve as a neutral facilitator. In addition, a consultant can help to ease any staffing constraints.

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Knowing Who You Are: The How To's of Regional Assessment

The assessment process is a c tical next step after the visioning process. In this phase, the region assesses its current reality — its performance and capacity relative to the vision. If a vision provides a region with a hoped-for identity, the assessment process provides the region with a real story about itself — how well it is doing and why. At the conclusion of the assessment, a region can begin to frame opportunities and challenges – and develop a roadmap for action – in light of its vision and current reality.

The assessment requires both quantitative and qualitative analysis. While this section cannot describe all the details of such analysis, it does provide a framework within which those skilled in analysis can work.

Getting Started

More traditional approaches to assessment typically involve economic development agency staff engaging in a series of steps. These include:

- Creating an advisory panel of community leaders;
- Issuing a request for proposals from consultants;
- Hiring the winning consultant; and
- Standing back while the consultant prepares the analysis, presents it to the advisory committee for comment, writes a report, and then goes home.

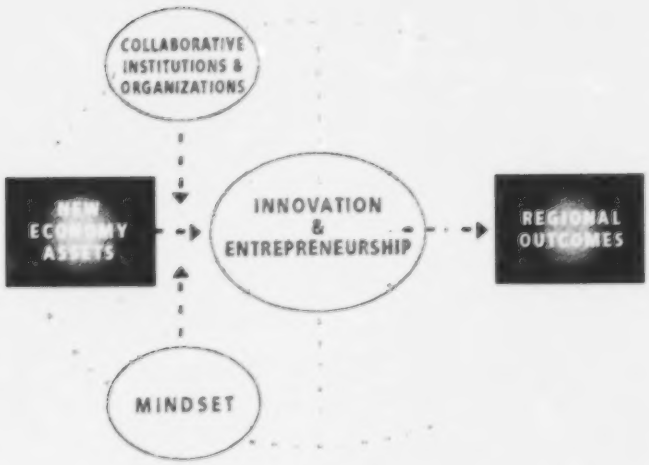
Does this sound familiar to you? If so, you also know that quite often, no one in the region has any sense of ownership of the assessment, nor any idea of what to do with it. The region has paid for a report that in all likelihood will sit on a shelf.

Create a Tool for Civic Engagement

To be fully effective, the assessment process should aim to develop local capacity for ***continuous self-assessment*** and to create a tool for engaging a diverse group of participants in the broader planning and implementation process.

The assessment process should be carried out under the guidance and with the active participation of a leadership group. The purpose of staff, whether in-house or consultants, should be to develop and enhance local volunteer capacity to engage in the assessment process. Staff and volunteers need to be willing partners in this effort. Volunteers require adequate time to learn and be motivated to do so. The investment of time will have a long-run payoff.

Identify Key Questions to Answer



There are basic questions that form the core of a regional self-assessment. These correspond to the innovation-led framework introduced in this guidebook's introduction and illustrated again above.

- What is the regional social and economic well-being of our residents?
- How productive are our trade-oriented clusters and sectors?
- To what extent are innovation and entrepreneurship contributing to regional productivity?
- What are the strengths and weaknesses of the knowledge economy asset base?
- How does our regional mindset support or inhibit innovation and entrepreneurship?
- Is the scope and effectiveness of our base of collaborative institutions sufficient for promoting innovation and entrepreneurship across the region?

For more detailed information on how to conduct a self-assessment, please see **Appendix B**. This section also includes a variety of illustrations.

Determining an Agenda: How To Frame Opportunities and Challenges

As the assessment process unfolds, a complex and detailed picture will emerge about how the regional economy works. The framing phase integrates and distills the various pieces of this picture to create a coherent, shared understanding of how well the region is doing and why, and to clarify the main issues and opportunities the region faces. This will help focus the community's attention on key opportunities for action and help to organize the work of the next phase, developing action strategies.

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Getting Started

Articulate the Story and Opportunities for Action

The framing exercise involves telling a compelling, concise story of the region's economy, including what it is, what it can become, and the key areas requiring attention and action. While the written story can be a short as two pages (and not be longer than 10), its essence should be able to be distilled into a paragraph. For it is the essence of the story that needs to be shared and owned by the region's leaders.

Having a common story that is both compelling and easily told is a necessary foundation for forging a common vision and, in turn, taking coordinated action. A long, complex story that cannot be easily understood or repeated will inhibit successful collaboration. The creative organization of information – and the way it is communicated — is very important. The particulars of data and information supporting the story can be provided in appendices or accompanying documents. Some regions prepare a set of economic indicators as part of the framing process, then update those indicators periodically to measure how well the region is achieving its goals. They present data in appealing and easy-to-understand formats.

Shift Mindsets about the Art of the Possible

Essentially, the framing exercise is a reshaping of the assessment results and desired future vision. The assessment may have found that commonly held beliefs about the region's economy or capacity were incorrect, perhaps even exploding long-held myths. Or, the assessment may have found that there is no commonly held narrative; rather, there is a diversity of perspectives, some incorrect and some not, but perhaps none having the full picture.

Regional narratives usually are based largely on anecdotes, personal experiences and traditional beliefs. The assessment, involving data analysis, interviews and surveys, allows the regional narrative to become far more accurate and useful. More importantly, it is a story that can be held in common by a wider range of people.

An Illustration: Winston-Salem, NC, Exchanges Cost for Value

Traditionally, the economy of Winston-Salem has been based on low-cost manufacturing. In the late 1960s, 47 percent of the region's wages and salaries came from tobacco and cost-sensitive industries such as textiles, apparel, furniture, food processing and paper. By 1985, this dependence had dropped only marginally, to 45 percent.

However, the combination of recession and increased foreign competition in the late 1980s and early 1990s served notice to the region that its high dependence on manufacturing and its competitive advantage as a low-cost area was not longer tenable. In short order, the area lost 20 percent of its manufacturing jobs. By 1993, manufacturing's contribution to earnings fell to 28 percent.

While Winston-Salem survived, and even thrived, in the 1990s by becoming a regional service center for banking, health and education, the shock of change forced the region to reframe its story and the challenges and opportunities before it. As one regional leader acknowledged, clearly, the past was no longer the path to the future. She explained that Winston-Salem had to reinvent itself and move from competing on cost to competing on value. The region has staked its future on investing in and taking advantage of creative, knowledge-based assets in its midst (such as Wake Forest University). It has defined its challenges as investing in knowledge-based assets, commercializing knowledge into viable products and maintaining its quality of life to attract high value-added firms.

Identifying a Course of Action: How To Develop and Prioritize Action Plans

The next step is to incubate initiatives for action in key areas identified as central for meeting the vision. Good ideas need to be turned into credible action plans. Successful implementation requires widespread participation in the process of designing new strategic initiatives.

Many regional strategic plans end up being long, complex documents composed by economic development professionals, read by few in the leadership community, and not used by those leaders as an essential guide to action. The approach advocated in this guidebook differs significantly. The strategic planning process is iterative. The various steps are frequently repeated, often simultaneously rather than sequentially. Community leaders are active and engaged; any written documents produced are tools for disseminating a common vision and a ***roadmap for action***. The elements of strategic planning are embedded in the entire process.

Traditionally, this step in the process has focused on the writing of a comprehensive plan, often meant to cover a 10-year period. However, the changes in economic structure and dynamics discussed in earlier chapters suggest another approach. This subsection will focus on how to think strategically about determining where the region wants to go – and how it can get there –through a series of strate-

gic activities that evolve over time. In essence, the region will develop a series of breakthrough action plans, time-sensitive in nature, that, when successfully executed, will initiate the next iterative phase of this process. These plans are a guide to action.

How Do We Get There?

Through the creation of a roadmap, a region can set out the means by which the region will achieve its vision, showing how it will seek to transform its assets, collaborative institutions, mindset and key clusters in order to achieve its goals.

The roadmap offers a number of specific strategies for achieving the vision. These strategies outline objectives (e.g., worker skills will stay current with the state-of-the-art) and the approach to achieving those objectives (e.g., for firms without adequate internal programs, skills training will be provided through employer training consortia and the community college system).

The roadmap identifies the near-term and longer-term actions to implement those strategies. Many of these actions will make use of specific economic development tools that build assets and collaborative organizations. Many such tools are available. Examples of asset-focused tools include revolving loan funds, small business incubators, workforce training programs, key infrastructure investments, and business attraction programs. Examples of collaborative tools include industry trade associations, entrepreneurship networks, and research and development consortia.

The roadmap indicates key organizational roles and responsibilities with regard to strategy implementation. Identification of leadership responsibilities allows implementation to quickly move ahead.

While the regional vision provides strategic planning participants with a shared sense of where to go, the roadmap provides a shared sense of how to get there. The roadmap is a working script from which the participants take their cues. Only through focused, coordinated, collaborative efforts is successful implementation possible.

The roadmap is suggestive, not highly prescriptive. This allows implementers the flexibility to adjust to changing circumstances and to have a sense of ownership of the results. But while the roadmap lacks detailed prescriptions, the roles and responsibilities for the various aspects of implementation are well defined.

As with the regional vision, the specific objectives of the roadmap must be achievable, based in reality. To create a roadmap, it is vital to understand the existing contours of a region. This only reinforces the need for the regional assessment.

As a document, the roadmap needs to be easily absorbed and compelling. The roadmap should not be buried in a dense, thick and overall uninviting document. It is meant to stimulate interest, commitment and engagement. If a broad cross-section of people cannot understand or identify with the roadmap, mobilizing people to participate becomes quite difficult.

The contents of the roadmap are demand-driven. Building strategies around the needs of business is crucial for successful regional development. Regions need to tailor the cultivation of economic development tools (supply side) to business (demand side) needs, not the reverse.

The roadmap could contain strategies concerning:

- the key clusters on which the region will rely in the coming years;
- how competitive advantage will be developed and maintained for these clusters;
- innovation and entrepreneurship;
- human capital, the value-added capacities of the workforce;
- knowledge development;
- physical infrastructure investments;
- local financial capital;
- the widening of economic opportunity to historically disadvantaged groups; and
- the qualities of the region.

The roadmap is not rigid and comprehensive, to be revisited after five or ten years. Rather, it is regularly revisited and updated as its milestones are achieved and as external circumstances change.

Being Ready to Revise the Vision and Roadmap

In today's economy, ideas, markets and competitive positions are changing rapidly. An innovative region needs to constantly and consistently reassess its situation, and then revise its vision and roadmap accordingly.

Consequently, regional leaders need to carry out an ongoing, iterative strategic planning process. With uncertainty the only certainty in today's economy, lock-step planning does not work. Flexibility, and the ability to regularly update both the vision and roadmap in light of changing circumstances, are what matter.

Continuous improvement is a core value for innovative regions. The aim is not only to have a plan that is appropriate to current circumstances, but that is increasingly effective over time. Once initial goals are achieved, regions become more confident and assertive in their abilities to tackle difficult issues. Moreover, an ongoing strategic planning process should build in learning from past efforts.

In the case of Louisville, the initial vision and roadmap were scaled for success. When a strategic planning process is getting underway for the first time, it is helpful to have a plan that is achievable and not necessarily sweeping. Since strategic planning is an ongoing process, building on successes is a major driver of future iterations. More ambitious objectives can be taken in later iterations, once a pattern of success has been established.

Over time, it is possible that while the vision remains valid, the roadmap needs adjusting if some approaches are not working as well as originally hoped. Lessons learned can be identified and applied to improve the roadmap.

Anticipation of change, rather than reaction to events well after the fact, is the secret of the innovative regions. They take self-assessment and continuous improvement to heart. They do not wait for a crisis for motivation. These regions are in charge of their destiny to a far greater extent than most. They do not get caught in the "comfort zone."

Strategic planning is the means by which an innovative region takes charge of its future. It is a process through which a region comes to understand what it is and what it can be. It is an effort out of which leaders emerge to guide the region to achieving its potential.

The product of strategic planning is not only a plan. Strategic planning provides the forum in which those who care about their communities build relationships with each other, and these relationships form the foundation for a process that generates regional successes. In this way, strategic planning is also fundamentally a relationship-building process that generates a mechanism for a sustainable commitment to change. This is a breakthrough process, which in many ways turns the tenets of traditional planning on its head.

Getting Started

Form Focused Teams to Develop Action Plans

Successful regions know that people will be committed to implement plans only if they have had a hand in creating them. Regions form teams of people who can focus on developing creative solutions to addressing a particular opportunity or challenge. The goal is to tap the collective knowledge of a team in developing an action approach. A related goal is to surface credible champions for that approach that can drive implementation.

Provide Discipline to the Incubation Process

The leaders overseeing the strategy-planning process need to provide a strong discipline for results. The expectation needs to be clear that the process is about moving to action, not producing a position paper or set of recommendations about what someone else should do. Timelines need to be clear and roles well-articulated, with staff and administrators available to support all the teams' work.

Have Leadership Team Act as Integrators

The role of the leadership team is to support the working teams and then to meld their top-down influence with the bottom-up forces of new ideas and initiatives. The leadership team acts as integrators of the roadmap.

An Illustration: Louisville, Kentucky

In 1996–97, Louisville's two major economic development organizations, the Louisville Chamber of Commerce and the Greater Louisville Partnership, convened a regional visioning process that involved a large number of executives and staff from regional businesses and universities. The report of the Visioning Task Force provides a framework or roadmap within which those assigned implementation responsibilities can prepare a business plan that is "actionable and accountable." Implementation is seen as a decentralized process, with subgroup leaders given substantial responsibility. The complete Visioning Report can be seen at http://www.greaterlouisville.com/about/vision.htm.

The vision has been grounded in the region's current reality as it refers to where the region wants to be in 2010 as compared to where it is currently. These contrasts and the forward-looking vision are anchored by accountability measures to track the region's progress in achieving its goals. A commitment to achieving results and defining success have resulted in continued assessment of the following questions:

- What commitments can be made by Joint Venture and other organizations to achieve the benchmarks for progress?
- What will be different as a result of the process?
- How will the process and the results be communicated?

Some Tools for Strategic Action

Economic development tools are formal means by which strategies are implemented. They are investments in a particular type of asset or collaborative organization. Tools may be in the form of a program; they may be physical in nature. A broad array of tools is available:

- **Technology training institutions** – Examples include: certification, degree programs and incumbent worker skills development, through universities, colleges, community colleges, professional and industry trade associations, union training centers, and other nonacademic organizations. Such programs are very important for ensuring that the region's technical workforce maintains its competitiveness.
- **Research and development consortia** – Strategic alliances among firms, research universities and/or federal laboratories form to pursue the creation and development of new technologies of mutual interest.
- **Technology business incubators** – Incubators nurture young firms, helping them to survive and grow during the start-up period when they are most vulnerable. Incubators provide hands-on management assistance, access to financing and orchestrated exposure to critical business or technical support services.

- **Technology transfer and commercialization programs** – Technology transfer programs aim to facilitate the development of new technologies through technical assistance, licensing agreements, cooperative research and development and information exchange. Commercialization programs seek to aid firms in bringing new technologies to market. A wide array of such programs are operated by the federal and state governments, universities, nonprofits and commercial organizations.
- **Technology business development centers** – Technology business development centers aim to foster the formation and growth of technology-related businesses through providing a variety of support services. Most centers are found at universities. A number are funded by the U.S. Small Business Administration, and some independent nonprofit centers exist as well.
- **Entrepreneurship support networks** – Local technology entrepreneur networks aim to support members in growing their businesses. Many are independent nonprofits; others are local chapters of a national organization (e.g., the Council of Growing Companies).
- **Venture capital funds and networks** – Having access to venture capital is critical for the growth of technology companies. Venture capital firms are private partnerships or closely held corporations, funded by private and public investors who seek to finance new and rapidly growing companies. Venture capital networks facilitate the interaction, in-person or on-line, between individual investors and entrepreneurs seeking capital.
- **Invention/product development support networks** – A number of local support networks for inventors and product developers exist around the United States. Many are affiliated with national associations, while others are independent.
- **Research parks** – A research park aims to facilitate the creation of advanced technology business by offering buildings designed primarily for private and public research and development facilities. Often, the park has a formal relationship with a research university.
- **Technical assistance services** – These programs aid corporations, primarily manufacturers, in improving process technologies; many also help with business practices. A number of programs participate in the Manufacturing Extension Partnership sponsored by the National Institute of Standards and Technology.
- **Targeted business attraction programs** – Efforts to market a region to firms located elsewhere are an important complement to entrepreneurship programs.
- **Key infrastructure investments** – Such investments focus on transportation facilities (roads and bridges, rail, airports), telecommunications, energy and water and sewer. Growth very much depends on a region's ability to move people, goods, power and ideas across the region and beyond.

See **Appendix C** for examples of the "best practices" in the use of each of the above tools.

Don't Mistake Tools for Strategy

A common mistake in economic development is to confuse a tool with a strategy. A small-business incubator is a tool. Building a small-business incubator does not constitute a strategy for small-business development, itself. Such a strategy could involve selecting any number of tools (e.g., entrepreneurship networks, business development programs, incubators) and indicating how these tools would be used – detailing the process by which the small-business development objective would be achieved.

Any economic development tool must be customized to the particular needs of the region. Another common mistake in the development field is the copying of another region's program without modification or thought. Regions must custom-fit not copycat.

From Agenda to Reality: How To Mobilize for Implementation

In successful regions, good work in completing the prior elements of the strategic planning process lays the foundation for successful implementation. In these regions, leadership has been engaged from the start, there have been sufficient opportunities for broader civic engagement, and the process of developing action plans has been creative and disciplined. Implementation, the next logical step, involves mobilizing people and resources to get things done.

There are four elements crucial to a successful implementation process:

- Demand measurable results and accountability;
- Focus, focus, focus;
- Conduct ongoing renewal of analysis, strategy and leadership; and
- Nurture a lasting culture of collaborative leadership and civic engagement.

In the first instance, measurable results and accountability must be demanded of any action plan that is moved to the implementation phase. Timelines for deliverables need to be established, and a self-assessment mechanism for monitoring progress needs to be implemented.

Secondly, it is clear that those plans that stay focused on achieving specific outcomes will be successful. Lack of focus can arise for a number of reasons: an insufficiently developed action plan, conflicting agendas among team players, or just confusion about roles and responsibilities. Each team member's roles and responsibilities should be clearly delineated, and everyone should be comfortable with their tasks and the timing for completion.

Third, expect that there will be a need to update analysis, revisit strategy and renew leadership as part of both the process of implementation and as a broader process for reinvigorating the strategic planning dynamic of a region.

Finally, cultivating a culture of collaborative leadership and civic engagement is vital to sustaining the thinking and action needed to support economic development today.

Getting Started

Manage the Leadership Transition

At the point of transition from developing action initiatives to implementation, strategy efforts can collapse. In many cases, initial leaders are worn out; new champions at the same time may be emerging. The leadership team needs to get the right mix of volunteer and staff people in place so that momentum is not lost and implementation will occur.

Create Accountability for Results

"Task, deadline, event" is the mantra of the driver of the implementation process. Timelines with clearly identified public events can help to drive volunteer processes based on the simple motivation that everyone wants to look good at the event. The most effective action plans have clear, measurable objectives that can be measured in terms of results. Often, action plans will identify activities but fail to state clear outcomes. A strategic planning process that creates action plans with clear outcomes can make the process of measuring results much easier.

Working groups that are implementing results can become focused on the details of implementation and not see the bigger picture, which often involves connecting to other similar efforts. A leadership group should be formed to help support implementation groups by receiving periodic reports on results. In this fashion, a bottom up, top-down dynamic can be created.

An Illustration: Silicon Valley — Implementing a Vision

The ability to succeed in mobilizing communities for implementation lies in the engagement of leaders that represent all sectors of the community as well as a broader engagement of that community. In 1998, Joint Venture: Silicon Valley, a public-private partnership, released *Silicon Valley 2010: A Regional Framework for Growing Together*, a vision that integrates goals for an innovative technology-intensive economy with a livable environment and inclusive society. It was the product of 18 months of work by a vision leadership team composed of a diverse group of regional citizens from business, government, education and the community. This group also represented the region's racial, age, gender, geographic and political diversity. It was chaired by Jay Harris, chairman and publisher of *The San Jose Mercury News*, and by Dianne McKenna, retired supervisor or Santa Clara County.

The team "integrated" inputs from eight focus groups, a public opinion survey of 1,000 residents, and 10 community town-hall meetings to create a shared regional vision, with 19 specific goals for achieving progress in creating an innovative economy, livable community and inclusive society.

This process successfully engaged business leaders and the broader public in generating shared enthusiasm and commitment for the future of the region. In 1999, Joint Venture created the Silicon Valley Civic Action Network (SV-CAN) to stimulate local action in support of the regional goals of "Silicon Valley 2010." SV-CAN is planning to sponsor a series of workplace forums for employees at major technology companies. It has also hosted community forums on closing the "digital divide."

To measure progress toward the economic and community goals set out in "2010," Joint Venture: Silicon Valley will continue to monitor activity in these areas and publish an indicator report on an annual basis.

Continually Improving: How To Renew the Process

An effective strategic planning process is really a learning process. Initial goals and visions need to be readjusted based on changing conditions and results. Think of the strategies and implementation task as experiments, each one trying to reach for strategic goals. None will be totally successful, bu[illegible]e learning gained from the process of testing new approaches and ideas will help to improve performance next time.

Organizations designed to implement strategies need to adapt over time. John Gardner has called this process "self-renewal." In fact, successful organizations embrace change and continuously renew themselves. The basic idea outlined in the book *Built To Last* is to remain true to your values while continuing to change.

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An Illustration: Chattanooga — Revision 2000

The renewal process involves two major elements, revisioning and regrouping. After Chattanooga had implemented most of the actions identified in its Vision 2000 initiative, it embarked on Revision 2000. As a learning process, it is important to revisit initial goals and vision and rethink where the effort must go next. At the same time, it is important to regroup. Some initial team members will become tired or change their interest. A process of continuously bringing new people into the effort is critical.

Mayor Glenda Hood of Orlando confirms the value of the Chattanooga renewal when she points out that she and other members of the economic development community are constantly going out to meet new people and inviting them into their regional efforts. "We ask them, and they come," she said. The key to this is asking, and not assuming that people know where they are needed.

Getting Started

The strategic planning process is a never-ending circle, not a straight line. Knowledge and creative thinking inform the process at every step. Values and aspirations inspire the process as well. What communities do is combine the hopes and desires of people with good facts and information to create a vision with measurable goals that can guide action plans created by leaders working with citizens. Once implemented, these plans should be evaluated for results and a new cycle begins. Strategic planning, like learning, never ends.

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PART TWO: Some Questions to Consider

Innovation-led development requires the participation of a broad-based team. Strategic planning for innovation-led development is a collaborative, ongoing process. To be successful, a diverse group of stakeholders from the public and private sectors in your region must be willing to make commitments to collaborative leadership and to broad-based participation. Does your region make the commitments necessary for successful strategic planning?

1. Does your region value collaborative leaders? Do you have strong leadership that goes beyond the "usual suspects?" Do these leaders, not staff, guide the strategic planning process?
2. Is the process of strategic planning and implementation open to organizations and persons from across the private and public sectors? Are special efforts made to build relationships among people from different sectors?
3. Does your region have a collaborative process for producing a shared vision and roadmap for achieving it?
4. Do people and organizations in your region put a premium on continuous learning?
5. Does your region seize opportunities as they arise, or is it too difficult to motivate people to action when things are comfortable?
6. Do the managers of your regional resource organizations (e.g., universities, community colleges, economic development organizations) have productive mechanisms for regularly listening to the business community?
7. Do you develop detailed static strategic plans, or do you have regularly updated roadmap-type plans, in which you know where you want to go but do not plan the details of getting there too far in advance? If you create static plans, to what extent are those plans relevant three and five years later?
8. Does your region rely primarily on attraction? Are there meaningful mechanisms for promoting business development, expansion, and retention?
9. Is your region willing to invest in a wide array of development assets, particularly those related to the knowledge economy? Or, is the focus primarily on physical infrastructure and tax credits?
10. Is your leadership up to the task?
    - Do local leaders act as if their community is part of a larger economic region? Are community issues addressed in a collaborative, rather than adversarial manner?
    - Do leaders let turf issues get in the way of collaborative solutions? Are win-win scenarios often forged and followed?
    - Are business, community, government, and university leaders in sync on important economic issues? Do these different members of the community respect the perspective and expertise that each has to offer?
    - Does the region's leadership team include government leaders who collaborate across political boundaries?

- Are business leaders from traded-sector businesses part of the leadership team of the region?
- Do business leaders place high expectations on one another to get involved in civic affairs?
- Do leaders in the region roll up their sleeves and get involved, or do they tend to delegate to economic development staff to implement?
- Does the region have visible regional or community leadership role models?

Part Three

APPENDIX A: Knowledge Economy and Regional Capacity Concepts

The Development of the Knowledge Economy

Technology and Wealth

Technology has been the foundation of civilization — new ways of shaping, arranging and combining matter have brought about the development of the wheel, the plow, sailing ships, municipal water systems, the telegraph, electricity, the internal combustion engine, penicillin and the Internet. Each age of civilization takes the technological achievements of prior eras and builds on them, creating new wealth. Economic development has been technology-led for thousands of years.

We know how to build technology because we have developed, using economist Paul Romer's terms, a large number of "recipes" for combining "ingredients" to make valuable products:

> *For example, we have ideas about ways to make steel by combining iron with carbon and a few other elements. We have ideas about how to take silicon — an abundant element that was almost worthless to us until recently — and make it into semiconductor chips. So we have raw materials to work with, and we have ideas or knowledge that tell us how to use those materials.*[17]

Economic growth, then, is based on technological innovation — on the invention of new recipes. As we develop better ways to work with materials, our ability to create more value and wealth grows. Economic growth is also based on sharing good ideas. New ideas need to build on existing ones. Growth cannot take place if we have to constantly reinvent the wheel.

At any point in time, some recipes are radically new; others are improvements on older versions. Some may involve manufacturing a product, others involve providing a service that uses existing technologies in new ways. Some may involve the content of the product or service, others involve how the product is made or the service delivered.

As Romer says, the number of undiscovered recipes for reorganizing physical matter is more than we can probably imagine or have yet to discover. The possibilities for new wealth creation are infinite.

Over the last several decades, the development and dissemination of knowledge and technology have transformed the U.S. economy. As a result, standards of living have risen dramatically.

The Nature of Markets and Business Operations in the Knowledge Economy

The number of knowledge-based products and services has exploded. As new production, transportation and communication technologies have become available worldwide, the nature of our economy has changed dramatically. Exhibit A summarizes and provides examples of this transformation from a "material" economy to a "knowledge" economy.

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17 Joel Kurtzman, "An Interview with Paul Romer," *Strategy and Business*, First Quarter, 1997. Paul Romer has carried out pioneering thinking regarding the relationship between technology development and economic growth.

Exhibit A: Types of Innovation

	Product	Service
Radically new	Airplane, telephone, computer, Internet	Overnight package delivery, national television networks, Internet-based retailing
Improved	New-to-market cell phone, car, software release	On-line package tracking, on-line travel reservations
More efficient	More efficient production machinery, more efficient use of existing equipment, better worker training	Load-based call distribution, better worker training

In essence, markets have shifted from being national to global in scope, and competition has become far more intense. It has become quite difficult for U.S. businesses to compete in world markets on the basis of cost. An important ingredient for competing on cost is labor, and the cost of labor is far cheaper elsewhere. However, with our unmatched knowledge and innovation infrastructure that allows us to discover and share new ideas, U.S. businesses now compete primarily on the basis of value. (See Exhibit B.)

Exhibit B: The Changing Economy

	1960	1999
Composition of workforce		
College graduates[18]	7.7%	25.2%
Managerial, professional, technical workers	22.1%	33.3%
Production workers, handlers, laborers	44.4%	27.1%
Women	32.3%	46.5%
Technology development and application		
Manufacturing productivity (1992=100)	34.1	142.3
Investment in information processing	$18,419	$407,200
R&D expenditures ($1999, millions)	$51,382	$244,828
Industry contribution	33.0%	73.1%
Scientists and engineers in industry (thousands)	300.0	997.9
Patents issued	47,169	153,493
Economic and social well-being		
Per capita income ($1999)	$10,386	$28,542
Average annual earnings per FTE worker ($1999)	$18,124	$36,653
Infant mortality (per 1,000 live births)	26.0	6.9
New single-family home, median square footage[19]	1,385	2,040

18. Percentage of adults 25 years and older.

19. Initial figure is for 1970.

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Increasingly, these unique ideas are taking the form, not of material objects such as rolled steel or refined oil, but of packaged intelligence with minimal physical content, such as software, web applications and pharmaceuticals. The value of these knowledge-based products greatly exceeds the actual costs of the physical materials from which they are made. This new way of competing has many implications for businesses, industries and regional economies as a whole.

Competing on value through the production of unique knowledge-based products and services has an additional attraction — increasing returns. For "dumb" materials such as coal and oil, the primary costs are not in the discovery but in the production — getting it out of the ground. At some point, companies reach diminishing return — it costs more than it is worth to get that next barrel of oil. But for "smart" objects like software and pharmaceuticals, the primary costs are in development. The costs of reproducing the object are minimal. Returns are not bounded by supply, only by demand.

Developing new ideas opens a new world of opportunity for making profits. In whatever industry the new idea is used, as long as it is unique and valued, people will pay more for it. And, the U.S. government affords protection to new ideas by granting patents that allow inventors and companies to control their use. At the same time, experience shows that the profit-making potential of any unique idea is temporary. Patents run out. The lure of profits from unique ideas is so great that, patent or not, someone somewhere is always aiming to top it with a new idea.

As a result, the structure of the knowledge economy is one increasingly based on serial monopolies. Competitors regularly leapfrog over one another in the development of profit-making new ideas. What does this search for temporary monopoly profits mean for businesses? One, it has translated into a surge in new business development. Many people think they have a good idea to exploit. Two, firms are shifting from a focus on static efficiency, i.e., lower costs, to dynamic efficiency to a focus on creativity in generating new viable ideas, speed in getting these new ideas to market, and then flexibility in adjusting to market circumstances. Each business wants to lock in that temporary monopoly before a competitor does. To be competitive in this environment, companies must be fast and flexible. Exhibits C and D provide two ways of understanding how business practices are being transformed.

Exhibit C: Comparison of the Material Economy and the Knowledge Economy

	Material Economy	Knowledge Economy	Comments
Scope of markets	National	Global	In 1959, imports and exports each equaled 4% of GDP. In 1999, imports equaled 14% of GDP, exports 11%. During 1959–99, real imports grew 1,282%, exports, 1,450%.
Products and services	Standard	Customized	Process technologies increasingly allow products and services to shift from "one size fits all" to customization to consumer specifications.
Competitor technologies	Similar	Dissimilar	Competing material economy products (e.g., oil) usually share the same technology. In the knowledge economy, firms often compete with quite different, new technologies (e.g., DSL vs. cable modems vs. wireless).
Basis of competition	Low cost	High value	With standardized products and services, competition was largely on low cost. With the differentiated products allowed by technology, competition is increasingly on value. Few low-value goods are made in the U.S.
Intelligent products	No	Yes	Material economy products, such as oil, steel and autos, do not have intelligent properties. Knowledge economy products have packaged intelligence with little physical content (e.g., software, pharmaceuticals). These products' value greatly exceeds the costs of their physical materials.
Traded products	Goods	Goods & services	Once, traded products were primarily manufactured goods. Now, traded products increasingly are services.
Production returns to scale	Decreasing	Increasing	For material economy products, returns decrease with scale (e.g., the last barrel of oil costs more than the first). For knowledge economy products, returns increase with scale. Primary costs are in development; manufacturing costs are minimal. Returns are not constrained by supply, only by demand. Per-unit costs drop as more units are sold.
Technological change	Slow	Fast	The rate of technological change increases over time.
Competitive advantage	Long-term	Short-term	In the material economy, firms could easily maintain competitive advantage for decades. In the knowledge economy, competitive advantage is not easily maintained and is often temporary.
Efficiencies emphasized	Static	Dynamic	Material economy firms focus on static efficiencies — lower cost per output. Knowledge economy firms emphasize dynamic efficiency — the personnel, practices, resources and culture to rapidly develop new ideas and effectively respond to competitors.
Industry structure	Stable oligopolies, large firms dominant	Temporary monopolies. Active entrepreneurship	Material economy firms seek economies of scale by building corporate size, leading to oligopolies. Knowledge economy firms are more likely to develop temporary monopolies, with lead firms leap-frogging each other as new, unique products are developed. Firms are constantly entering and exiting, shifting markets, growing and downsizing. Entrepreneurship brings new businesses, products and technologies to market.
Level of competition	Moderate	Very high	With relatively stable oligopolies and products, competition tended to be less intense in the material economy. A firm's share of knowledge economy markets can never be taken for granted, because competition is intense.

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Exhibit D: Evidence of the Knowledge Economy

In 1968, 78.5 percent of non-rubber footwear purchased in the United States were made in this country. By 1998, figure had fallen to 7.2 percent. Over these 30 years, industry employment fell from 233,400 to 33,533. Seven hundred sixty-four factories closed. The average hourly wage for a production worker in the U.S. shoe industry in 1998 was $8.62/hour.[20]

Of every 5,000 medicines tested, on average, only five are further tested in clinical trials and only one of these is approved for patient use. The average cost of bringing one new medicine to market is $500 million. It takes an average of 12–15 years to discover and develop a new medicine.[21] "(T)he expense of making the pills — the raw materials and factory costs — is often just 20 percent to 30 percent of their sales price . . . ."[22]

The transformation of business activity — failures, incorporations and self-employment

	1970	1980	1990	1997
Failures per 10,000 firms	44	42	74	89
Business incorporations (000s)	264	534	647	799
Nonfarm proprietorships (% total employment)	10.7%	12.1%	14.0%	15.1%

The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail takes the radical position that great companies can fail precisely because they do everything right. It demonstrates why outstanding companies that had their competitive antennae up, listened astutely to customers, and invested aggressively in new technologies still lost their market leadership when confronted with disruptive changes in technology and market structure.

Christensen argues that good business practices — such as focusing investments and technology on the most profitable products that are currently in high demand by the best customers — can ultimately weaken a great firm. He shows how truly important, breakthrough innovations — or disruptive technologies — are initially rejected by mainstream customers because they cannot currently use them. An excessive customer focus prevents firms from creating new markets and finding new customers for the products of the future. As they unwittingly bypass opportunities, such firms clear the way for more nimble, entrepreneurial companies to catch the next great wave of industry growth."[23]

20. Current Highlights of the Nonrubber Footwear Industry. Footwear Industries of America. 1999.

21. Pharmaceutical Research and Manufacturers of America. "Why Do Prescription Drugs Cost So Much, and Other Questions About Your Medicines," June 2000, p. 2.

22. Melody Petersen, "Growing Opposition to Free Drug Samples," *New York Times*, November 15, 2000.

23. Clayton M. Christensen, *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*, Boston: Harvard Business School Press, 1997, book jacket.

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Exhibit E: Business Strategy and Operations in the Knowledge Economy

Companies are focusing on their core competencies (what they are best at and what makes them most valuable), and outsourcing and spinning off functions that they think other businesses can do more efficiently.

Businesses are developing strategic alliances with other businesses to develop new products and services, and **making strategic acquisitions** that bring in complementary intellectual property and knowledge workers. In general, conglomerates and highly vertically integrated companies are becoming an approach of the past.

Companies are locating operations in places that offer unique advantages that enhance creativity, speed, and flexibility. With distance less of an impediment to communication, many firms are locating each distinct function in a locale appropriate to that function. Headquarters, research, production and service can be in separate regions, even countries. Location decisions are not considered permanent.

Firms are encouraging creativity among all employees, recognizing that good ideas, crucial to competitive success, can come from anyone. Tools include stock options, bonuses, quality circles, and awards. In the material economy, firms rewarded employees for adhering to the routine, for not thinking.

Businesses are going to great lengths to attract and retain knowledge workers, reducing workplace formality, increasing compensation, and allowing work from home and near-home locations.

Firms are emphasizing productivity in their operations, adopting new technologies and practices. While product uniqueness is very important, keeping costs low remains important as well.

Companies are sstruggling with how to best use emerging technologies that compete with current in-house technologies with which there is years of experience and millions of dollars in investment.[24] The tension between the fear of alienating staff and cannibalizing current business ("switching costs") and the fear of losing to competitors unencumbered by old technologies is quite real.

24 Christensen, *The Innovator's Dilemma*.

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Exhibit F: Coming Together and Coming Apart in the Knowledge Economy

Strategic Alliances

- Bluetooth, the short-range wireless protocol, originated when Ericsson, IBM, Intel, Nokia and Toshiba joined to create a standard for transmitting data between devices without cables.
- Gateway, Inc. and Broadcom Corporation formed a strategic partnership to allow consumers to connect to the Internet and digital devices in homes and home offices at broadband speed using existing telephone lines.

Acquisitions

- In six years, Cisco Systems has greatly expanded its intellectual property base and knowledge workforce through the acquisition of more than 60 companies.
- From January 1 through November 13, 2000, the computer software, supplies and services sector experienced 2,261 mergers and acquisitions valued at $150 billion. This activity accounted for 26 percent of all U.S. mergers and acquisitions.[25]

Corporate Spin-offs

- General Motors and Ford Motor Company spun off their auto parts divisions as independent companies, Delphi and Visteon, respectively.
- Hewlett-Packard spun off its instruments unit as an independent company, Agilent.
- AT&T has spun off a number of businesses that are not part of its core, including NCR, Lucent, and Liberty Media.

Contracting out

- Flextronics and Solectron are two of the largest firms in electronic manufacturing services (EMS), buying up and operating existing factories once belonging to firms such as Siemens, IBM and Nortel. "Big-name electronics companies also are asking contractors to handle after-sales service and even to help design new products, entrusting them with intellectual property that before was a closely guarded secret. . . . Similar economics are reshaping other industries. Huge, integrated services conglomerates are emerging to handle tasks outsourced by banks, pharmaceutical companies, and auto makers."[26]
- Contentville is a new on-line book and magazine store that contracts out nearly its entire operation — it has only 50 employees.

25. Mergerstat www.mergerstat.com

26. "The Barons of Outsourcing," *Business Week*, August 28, 2000.

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Workforce and Clusters in the Knowledge Economy

Location is an extremely important consideration in a firm's competitiveness. Businesses are looking for places that can provide the assets, collaborative institutions, and mindset that support success. This section explores in more depth one key asset, workforce, and one type of collaborative institutions, industry clusters.

Businesses are looking for places that have a workforce with the particular skills, abilities, and attitudes they need to be competitive. They seek workers with two types of knowledge—the explicit and the tacit, or "know what" and "know how." "Know what" is explicit knowledge quickly conveyed from one person to the next. Data, formulas and "recipes" are examples of explicit knowledge, recorded as part of a body of formal knowledge. Tacit knowledge, "know how," relies primarily on learning by doing, not textbooks. How well one designs a car, writes software and repairs a tractor is as much, if not more, a function of innate skill and learning by doing as of book knowledge.

Both "know how" and "know what" are crucial for creativity, speed and flexibility. In the knowledge economy, places compete on their ability to deliver a workforce with first class "know what" and "know how." Explicit and tacit knowledge is just as important for the competitiveness of apparel firms and tourist centers as they are for software firms. Having a workforce with cutting-edge knowledge is a prerequisite for expanding incomes and wealth.

To gain access to a knowledgeable workforce, many firms want to be co-located with relevant industry clusters. A regional cluster can be defined as a geographically concentrated group of business enterprises and non-business organizations (e.g., training centers, professional associations) with a bond around common products and markets, common distribution channels, common technologies, common labor pools, and/or buyer-supplier relationships.[27] Regional industry clusters can concentrate geographically in a metropolitan area or the central town in a rural county as well as in an area that crosses city, county and state lines. A cluster may be large, involving thousands of businesses and hundreds of thousands of workers, or small, involving a handful of businesses and a few hundred workers.

Clusters develop for any combination of reasons. These include: access to natural resources, university researchers, skilled labor, specialized physical infrastructure, or a large pool of capital; one innovative firm; specialized local demand; prior existence of suppliers, related industries or related clusters; and often some element of chance. The advantages of clusters can include:

1. **Clustering increases access to cutting-edge knowledge and stimulates knowledge development and exchange**

   Through the co-location of suppliers, businesses and research institutions, clusters provide a high level of access to both explicit and tacit knowledge and provide opportunities for sharing and expanding such knowledge. Knowledge is shared as workers change jobs.

2. **Clustering reduces costs**

   Clusters offer agglomeration economies — cost savings and greater access to suppliers, labor, markets, specialized transportation services, specialized training programs and other inputs.

27 The discussion of clusters is drawn from Porter, op. cit., and from Edward M. Bergman and Edward J. Feser, "Industrial and Regional Clusters: Concepts and Comparative Applications", *The Web Book of Regional Science*, Regional Research Institute, West Virginia University (1999), at http://www.rri.wvu.edu/WebBook/Bergman-Feser/contents.htm.

3. **Clustering creates opportunities for cooperation among competitors**
   Clusters offer the opportunity for cooperation among competitors, and between buyers and suppliers, in product and process development, joint marketing, joint training and joint production.
4. **Clustering encourages innovation and growth through rivalry**
   Firms close to one another compete for customers, workers, financing and preferential deals with suppliers. This competition can spur creativity, benefiting the region as a whole.
5. **Clustering creates critical mass for growth**
   A cluster's growth usually becomes self-reinforcing. Businesses spin off from existing businesses, infrastructure develops to serve the cluster (e.g., physical, capital, workforce training), new workers are attracted to the area for the number and quality of jobs, entrepreneurs are attracted by the cluster assets, and advantage is maintained through knowledge development and sharing. The incentive for each worker and business to seek advantage serves to sustain the growth of the cluster.

An Illustration: Cluster Elements in Grand Rapids, MI

The institutional furnishings cluster in Grand Rapids: Office furniture and partitions clearly belong in the cluster, as does seating for stadia, classrooms and transportation vehicles. These products have important commonalties in product attributes, features, components, and technology. Nearby metal parts and equipment manufacturers, plastics manufacturers, and printing companies are cluster suppliers. These supplier industries may also be part of other clusters, because they serve other customer industries such as automobile manufacturing. Particularly in metal parts, the prior existence of automotive suppliers serving the nearby D[illegible]roit automotive cluster contributed importantly to the development of the furnishi[illegible] cluster.

from Michael Porter, On Competition
(Harvard Business Review Books, 1998), p. 202.

A cluster's competitive position may be self-reinforcing for a long time, but it cannot be taken for granted. Some clusters more effectively promote collaboration than others. Frequently, clusters are diminished by the emergence of new ones. The set of major clusters across the United States has changed quite dramatically during the last 50 years.

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Innovation-Led Development: Supplemental Definitions and Capacity Building Illustrations

Definitions: Knowledge Economy Assets

People — Talent is the most important asset of the knowledge economy. Skilled people with various kinds of experience are a primary ingredient in the knowledge economy, where technology and more complex business models require continuous training and the ability to be life-long learners.[28]

Knowledge and ideas — These are the capital of the new economy. Organizations and institutions need to continuously generate new ideas that can form the basis for new products, processes and services, which are vital for sustaining both economies and communities.

Technology R&D — It can be both a tool and an outcome of the generation of new knowledge and ideas. It has broad-ranging applications for business, the community and the government.

Financial capital — Different forms of investment capital, from individual wealthy "angel" investors to venture capitalists and government, provide the needed financing to start and grow companies.

Communications infrastructure — The new economy is in part an economy, in which information needs to be moved from place to place with speed and flexibility. Advanced communications are needed to provide secure, reliable and rapid conduits for this exchange.

Physical infrastructure — A well-maintained infrastructure from airports to roads for the movement of goods and people is an important element of the new economy. Entrepreneurial activity is often more concentrated around areas with accessible and efficient airports.

Quality of place — A high-quality place is an asset that attracts new economy workers. Quality of place includes everything from the caliber of public education and choice in housing options to the quality of a commute and the preservation of open space. Economic progress and quality of life can be mutually reinforcing. Quality of place is a linchpin that connects the community and the economy. Often, communities with fast-growing economies lose sight of this connection, and they begin to erode the quality of life that initially contributed to their economic strength.

28. See **Appendix A** for further discussion on workforce characteristics attractive to businesses.

Illustration: Developing Knowledge Economy Assets

Investing in and cultivating a region's knowledge economy assets requires a long-term commitment. The following illustration reveals just how big the rewards can be for perseverance and patience. The Peter Kiewit Institute is the result of years of relationship building and a strategy of building on ever-larger successes that leverages those relationships.

Omaha, NE, Invests in its Human Assets

The approach undertaken in Omaha to develop its knowledge assets is an excellent example of innovation-led development with a focus on the development of talent. In the 1980s, Omaha realized that it needed to build a new path to regional prosperity. Not a casualty of the high-tech myth, Omaha's niche was identified in the application of technology, rather than its invention. There was a recognition that Omaha could take advantage of its advanced communications infrastructure (a byproduct of the presence of the Strategic Air Command) to build a competitive advantage in IT-based industries. An embryonic entrepreneurial cluster emerged, whose successes included the invention of credit card authorization technology. Today, Omaha processes over 45 percent of all credit card authorizations worldwide.

Early on, private- and public-sector leaders realized that a lack of skilled talent would constrain the area's future growth in tech-based industries. In the 1990s, they began to address this challenge head-on through a series of public-private partnerships that shared a common set of demand-driven requirements for success. Though the early conversations were difficult, educators and business leaders began a dialogue that provided a basis for collaboration on ever-ambitious initiatives. Organizations like the Applied Information Management Institute (AIM) facilitated these conversations, making a critical contribution to a culture and process of collaboration between businesses, educational institutions and the government.

The private and public sectors partnered in developing and creating a "cradle-to-career strategy," involving area businesses, the chamber, educators, state and local officials and community leaders. This approach resulted in several important public-private initiatives, of which one of the most important has been the founding of the Peter Kiewit Institute for Information Science, Technology & Engineering at the University of Nebraska. This nationally recognized model,

Omaha, Continued

built directly in response to industry needs, now attracts youth from all over the country. It also helped to retain top local talent that now often chooses the University of Nebraska and Peter Kiewit over MIT and Cal Tech.

Peter Kiewit Institute is an advanced technology learning laboratory for undergraduate and graduate students which maintains close ties to technology business leaders. It attracts and trains information technologists without duplicating the traditional engineering school already present at the University of Nebraska-Lincoln. It has a governance structure that allows for rapid changes in curriculum without getting bogged down in a more bureaucratic university process.

Omaha's private leaders raised $47 million for the Institute, which, combined with $23 million in state funding, helped to launch the school. The business community helped to lead an unprecedented process forward, in cooperation with the state and university system, from ground breaking in September 1997 to doors open in the summer of 1999. Just three years later, enrollments are up more than 80 percent, and successful recruitment of the "best and brightest" continues to grow at unprecedented rates under the leadership of Winnie Callahan, executive director of the Peter Kiewit Institute.

Leadership has been cultivated from every sector of the community through continuous recognition of shared goals, collaborative processes, and the results that flow from them. When Omaha shared its news of the grand opening of the Peter Kiewit Institute, for example, it took the opportunity to celebrate the role of collaboration in this process. Full-page advertisements ran in national papers: "It takes a community to raise a world-class Information, Science, Technology & Engineering Institute."

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Illustrations: The Dynamics of Collaborative Institutions and Organizations

Formal and informal networks are particularly important for economic development. These relational webs form a connective tissue, the density of which often is quite revealing about a region's vitality and resiliency. These relationships are often motivated by the intersection of business interests that have evolved within the context of an increasingly complex interdependent economy.

The first example illustrates what happens when two industry clusters intersect and what can be lost when they do not. Cluster networks should ideally engage in activities that facilitate collaboration within a cluster and across the cluster to other clusters, increasing the possibilities of cross-cluster fertilization (e.g., bioinformatics or telemedicine).

Networking the Networks: Phoenix AZ

Bob Case, head of the Arizona Bioindustry Cluster and the Harrington Arthritis Center, recognized the value of networking the networks. In the process of doing advanced medical research on joint-replacement technology, Dr. Case identified the need for a material that would have bone-like characteristics and be bio-compatible. He decided to attend meetings of the Arizona plastics cluster, which in turn led to contacts that resulted in the development of a prototype made from an advanced material (used in defense technology). Dr. Case's entry into the plastic cluster network was not frictionless. An important lesson learned for the plastics cluster was to be more receptive to such cross-cluster possibilities and take a proactive stance, circulating their newsletter to other possibly complementary industry clusters.

Collaboration Occurs in Many Forms: Madison, WI

Madison's highly successful effort to build its technology industry grows out of a set of long-term relationships among key players in the area's technology-oriented development organizations. This very effective network includes: staff at the Madison Gas & Electric (which operates incubators and functions as team leader); the University of Wisconsin Research Park; the Wisconsin Innovation Network (co-funded by Greater Madison Chamber of Commerce and the Wisconsin Department of Commerce); and the Wisconsin Alumni Research Foundation (one of the nation's oldest and most successful university technology transfer organizations). This informal professional and organizational network leads to a remarkable degree of consensus, collaboration and coordination.

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Illustrations: Cultivating a Regional Mindset

Regional attitudes and values toward competition and collaboration have an impact on the economic development trajectory of a region. For example, a region's business community, which has a company culture permeated by traditional competition, will have difficulty in accepting that working more closely with one's competitors, suppliers and customers is an important ingredient to economic success. One of the more celebrated examples of how cultural differences can affect regional economies is briefly described in the illustration about Silicon Valley versus route 128 in Massachusetts. Additionally, attitudes towards risk and failure can have a significant impact on the level of entrepreneurial activity one sees in an economy of a region. The illustration of Louisville is insightful in this regard.

Differences in Mindset Affect Collaboration: Silicon Valley vs. Route 128, circa 1994

Silicon Valley in California and Route 128 in Massachusetts are America's leading centers of electronics. The regions are similar in many respects; both trace their origins to university research and military spending, and both faced severe downturns in the early 1980s. Today [in 1994], however, Silicon Valley is again flourishing while Route 128 continues to decline.

Why did Silicon Valley adapt successfully to intensifying international competition, while Route 128 ceded its long-standing advantage in computer design and manufacturing to the west? Annalee Saxenian argues that despite similar histories and technologies, Silicon Valley developed a decentralized industrial system that encourages experimentation, collaboration and collective learning among networks of specialist companies, while Route 128 came to be dominated by a few self-sufficient corporations.

Saxenian demonstrates that Route 128 industries were slow to adjust to changing markets because skills and technology remained confined within independent firms. In contrast, companies in Silicon Valley created a regional advantage by drawing on local knowledge and relationships to create new markets, products and applications at a rapid pace. In doing so, they blurred the traditional boundaries between customers, suppliers and competitors.[29]

29. Annalee Saxenian, *Regional Advantage: Culture and Competition in Silicon Valley and Route 128*, Cambridge: Harvard University Press, 1994, bookjacket.

Louisville, KY: Mindset

In the mid-1990s, Louisville was a successful center of branch plant manufacturing and freight transportation. However, growth was minimal and the region had few locally-owned businesses. Economic development leaders were worried that the region was being left behind in the knowledge economy. Of particular concern was the lack of an entrepreneurial mindset — the region did not have a culture of risk-taking and business development. Doug Cobb, head of the regional chamber (soon to be Greater Louisville, Inc.), undertook an analysis of entrepreneurial activity in Louisville as compared to other regions. What he found was disconcerting: "Given the importance of growth companies as engines of job creation and wealth production, our weakness in entrepreneurship is a serious problem." In response, the Greater Louisville, Inc. created Enterprise Louisville to increase the quantity and quality of fast-growth companies in the region, and to transform Louisville's culture into a "hotbed of entrepreneurship."

Illustration: Fostering Innovation and Entrepreneurship

Innovation and entrepreneurship draw on knowledge-based economic assets and collaborative institutions and organizations. A risk-taking culture and creative attitudes also support them. In today's economy, the web of connections these attitudes, institutions, and assets enable help to support entrepreneurial and innovative activity, as people and ideas can flow easily between businesses and other organizations. Economic development organizations help to facilitate the creation of this web. In the case of Nashua, New Hampshire, the Center for Economic Development under the leadership of Walter Warren did just that, showing that economic adversity could become the "tipping point" for stimulating entrepreneurship.

Nashua, NH: Software Entrepreneurs Emerge

In the 1980s, Nashua residents were hit hard by the recession. Many of those who worked in hardware or defense lost their jobs, as defense contracts were cut and these industries underwent a major restructuring. With these changes, Nashua had a great asset, but it needed to be leveraged. Those who had worked in large, vertically integrated corporate settings, such as Digital Equipment Corp. and Wang, together represented a pool of "great gray matter." To stir the pot among this captive labor force, the Center for Economic Development, a private, nonprofit group, supported the formation of the Greater Nashua Software Entrepreneurs' Group (GNSEG). Since 1992, this group has been meeting monthly to discuss business issues in starting and growing a software company. GNSEG continues to be very important for networking and for generating a better understanding of the software industry in what had been traditional manufacturing town.

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Changing Models of Economic Development Planning	
Model A	**Model B**
This planning model operates with a more static world view, in which the pace of change can be accounted for within a comprehensive planning process.	The planning process assumes that change will occur and that the nature of change cannot be predicted.
This model focuses less on the importance of relationships and culture, and more on the significance and impact of a few high profile physical and organizational assets (e.g., growth = one industrial park + one updated communications infrastructure + one incubator + one marketing campaign).	Because the future is unknown, the emphasis is on expanding the diverse building blocks of the knowledge economy — the assets, collaborative relationships, and mindset that can anticipate, guide, and manage change.
The plan specifies a fairly detailed list of actions to be carried out over a multi-year period.	The roadmap, what would traditionally be considered the "plan," is written as a guide to action, and lacks a level of specificity in comparison to the comprehensive approach. The innovation-led roadmap allows for significant flexibility to respond to changing circumstances and to learning, but also to provides this flexibility to encourage creativity and a sense of ownership on the part of those implementing the roadmap.
Planning and implementation tend to be performed in a sequential, periodic, and linear fashion (e.g., plan, implement for five years, plan again). The approach tends not to build in mechanisms for perpetual renewal and reassessment. Planning objectives tends to be comprehensive, rather than incremental.	The strategic planning process is ongoing. Because economic and market conditions are in constant flux, the strategic planning process itself must be continuously "on" to identify and respond to change and learning. The various elements of the process are not carried out once in a sequential fashion, but over and over again, with changes in, and implementation of, the roadmap sometimes taking place at the same time. On the surface, it is a seemingly more disorganized approach to planning than the more comprehensive model; however, the underlying stability provided by common vision and commitment is the foundation on which an iterative process of planning and action occurs.
Process is carried out primarily by professional staff, sometimes with the involvement of a small, exclusive group of a region's business community, behind closed doors.	The process is driven by regional leaders, not by professional staff. Staff facilitates the process, but take their direction from regional leadership. The detailed work of this process is carried out by a corps of dedicated and by involved regional volunteers who represent key elements of the business, political and social communities. This corps must be regularly maintained, motivated and refreshed. This significantly expanded group of needed participants also reinforces the need for a different process approach to developing and implementing a plan.

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APPENDIX B: Approaches to and References for Regional Assessment

Moving through the Assessment

Before your region dives into the analytic process, it is useful to think about the tools you have at your disposal. Three types of tools are appropriate for use at various points in the assessment process: analysis of secondary data; surveys to collect data and information from regional actors; and interviews (focus groups and individual). The art of assessment includes understanding which tools to use in which phase of the assessment process. Resources for learning how to use various assessment tools are provided in the Appendix. Reference materials include:

- Sources of socioeconomic data;
- Basic techniques of regional economic analysis;
- Survey methods and techniques; and
- Interviewing methods and techniques.

Data can be organized according to state, metro area, county and place. One may need to combine data for several geographic areas to gain an accurate picture of the region.

It also is useful to t[illegible] carefully about the points of comparison in a region's analysis. In addition to looking at how the region has been performing over time, it often is helpful to compare how the region has been doing compared to the nation and other regions. Such region might be competitors, or with similar demographics, industry structure or assets. In any case, it is important to have an analytic rationale for your comparisons.

Assessing Regional Outcomes

What is the social and economic well-being of our residents? The overarching aim of economic development is to bring about a shared and sustainable improvement in the standard of living of a region's residents. A region's self-assessment begins by measuring residents' economic well-being.[80]

Who are we? The first step in looking at well-being is understanding the size and characteristics of the population. The following table describes some important measures for understanding the demographics of a region.

80 Most of the data on regional economic performance can be obtained at low or no cost from the federal and state governments. Suggested resources are provided in sidebars throughout this section. Links to numerous sources of socioeconomic data for states, regions, counties, and places can be obtained at www.esrindata.net

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Measure	Data Source
• Change in population over time • Components of population change over time (births, deaths, immigration, outmigration) • Characteristics of the population over time, by race, ethnicity, age and gender • Journey to work into and out of the region	Population Data, Bureau of the Census Http://www.census.gov/population/www/index.html
• Immigration and outmigration	Statistics of Income Division, Internal Revenue Service, http://www.irs.ustreas.gov/prod/tax_stats/soi/soi_pub.html

How is our region doing economically? Residents' economic well-being can be measured in terms of income, employment and quality of life.

Measure	Data Sources
INCOME	
• Per capita income[31]	Regional Economic Information System, Bureau of Economic Analysis http://www.bea.doc.gov/bea/regional/reis/index.html
• Median household income • Median family income	Small Area Income and Poverty Estimates, Bureau of the Census http://www.bea.doc.gov/bea/regional/reis/index.html 2000 Census, Bureau of the Census http://www.census.gov/dmd/www/2khome.htm Department of Housing and Urban Development http://www.huduser.org/datasets/il/fmr99rev/index.html American Community Survey, Bureau of the Census http://www.census.gov/acs/www
• Percentage of households in poverty	Small Area Income and Poverty Estimates, Bureau of the Census http://www.bea.doc.gov/bea/regional/reis/index.html 2000 Census, Bureau of the Census http://www.census.gov/dmd/www/2khome.htm American Community Survey, Bureau of the Census http://www.census.gov/acs/www
• Distribution of income across the population[32]	2000 Census, Bureau of the Census http://www.census.gov/dmd/www/2khome.htm American Community Survey, Bureau of the Census http://www.census.gov/acs/www
• Average earnings per job[33]	Covered Employment and Wages, Bureau of Labor Statistics http://www.bls.gov/cewhome.htm

Continues on next page

31 Per capita income is defined as total personal income earned in the region divided by the population.

32 One way to describe income distribution is to show numbers of households in various annual income brackets (e.g., $30,000-$40,000). Another is to show distribution of total income by population quintiles, for example, the top 20 percent of income-earning households might receive 60 percent of all income.

33 In looking at data by place of work, it should be kept in mind that not all workers in the region necessarily live in the region. Some may commute from outside.

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Measure	Data Sources
EMPLOYMENT	
• Number of employed and unemployed • Unemployment rate	Local Area Unemployment Statistics, Bureau of Labor Statistics http://www.bls.gov/lauhome.htm State of the Cities, BLS/HUD http://webstage1.aspensys.com/socds/BLS_LAUS/BLS_LAUS_Home.htm
• Labor force participation rate[34]	Geographic Profile of Employment and Unemployment, Bureau of Labor Statistics http://www.bls.gov/opub/gp/laugp.htm
• Number of jobs[35]	Regional Economic Information System, Bureau of Economic Analysis http://fisher.lib.virginia.edu/reis/index.html Current Employment Statistics, Bureau of Labor Statistics http://www.bls.gov/790home.htm Covered Employment and Wages, Bureau of Labor Statistics http://www.bls.gov/cewhome.htm State Labor Market Information Agencies http://www.icesa.org/sections/links/index.cfm?state County Business Patterns, Bureau of the Census http://www.census.gov/epcd/cbp/view/cbpview.html Metro Business Patterns, Census/HUD http://webstage1.aspensys.com/socds/CBPSE/CBPSE_Home.htm[36]
QUALITY OF LIFE	
• Population health	Centers for Disease Control and Prevention, Department of Health and Human Services http://www.cdc.gov/scientific.htm
• Access to health care	Health Professions Shortage Areas Database, Department of Health and Human Services http://www.bphc.hrsa.gov/databases/newhpsa/newhpsa.cfm
• Crime rates	Bureau of Justice Statistics, Department of Justice http://www.ojp.usdoj.gov/bjs/welcome.html
• Access to affordable housing	Rental Housing Affordability, National Low Income Housing Coalition http://www.nlihc.org/oor99/index.htm
• Environmental quality	Environmental databases, Environmental Protection Agency http://www.epa.gov/epahome/Data.html

Where does the money come from? It is important to identify the relative contributions of the various sources of personal income for the local economy.

Personal income has three sources: earnings from work (providing 68 percent of personal income); investment income (defined as dividends, interest, and rent, providing 19 percent); and transfer payments (for example, pensions, transitional assistance, providing 13 percent). Annual personal income is available by county from BEA.[36] Earnings from work are further subdivided into earnings from wage and salary (W&S) workers and proprietorship (self-employment) earnings. Although the self-employed do not represent all of entrepreneurship, they can serve as one proxy for entrepreneurial activity.[37]

34. The percentage of non-incarcerated adults who are in the labor force—that is, who have a job or are looking for one. Regions with low labor force participation rates might have a number of discouraged workers, those who have given up looking for work.

35. Employment data are by place of residence, and show how many people have a job or are looking for one. Jobs data are by place of work. One employed person can hold more than one job.

36. Available at http://fisher.lib.virginia.edu/reis. All data sources discussed are available through EconData.Net, unless otherwise noted.

37. Proprietorship data are obtained through analysis of the Schedule Cs submitted to the IRS in income tax returns.

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Analysis of personal income data would include percentage distribution of income by source and per capita income by source, in comparison with data from the state, nation and other regions, over time.

What is the distribution of jobs and earnings by industry? Investment income and transfer payments are important contributors to regional income. However, economic development focuses its attention on earnings from work, which is the single-largest source of income. The first step is to understand trends in the overall structure of a region's economy, in terms of both jobs and income.

Data on economic structure, provided primarily by the federal government, can go into detail (over 1,100 industries) regarding which industries produce how many jobs and how much income. It is helpful to see the contributions of various industries, such as manufacturing, finance and retail, to regional economic activity. In particular, it is important to understand that because certain jobs pay much more than others, some sectors that contribute a significant percentage of jobs provide a much smaller percentage of earnings (e.g., retail).

Regional employment and earnings data by industry are available through four federal statistical series mentioned above: the Regional Economic Information System (REIS) from BEA; the Current Employment Statistics (CES) data series provided through BLS and state LMI agencies; Covered Employment and Wages (ES-202) data, also provided through the BLS and state LMI agencies; and County Business Patterns, from the Census Bureau. These series differ somewhat in terms of geographic and industry detail. They also differ in terms of methodology, so two series providing data for the one industry in one region can differ. A detailed explanation of the characteristics of these various sources can be found in Joseph Cortright and Andrew Reamer, *Socioeconomic Data for Understanding Your Regional Economy: A User's Guide*, available through www.econdata.net

What is our economic base? A region's economic base is that portion of the economy that competes in markets larger than the region itself. Examples of typical economic base activities include manufacturing, tourism and regional hospital centers. The income earned by economic base industries, which comes in the form of wages, salaries and profits, supports the non-base component of the economy when spent on local services such as food markets, movie theatres and beauty parlors. This local spending is known as the multiplier effect.

What are the component industries of the economic base? What are their competitive strengths and weaknesses, issues and opportunities? Economic base industries take the form of clusters. Defining and examining the key clusters is critical to understanding regional productivity and the sources of regional well-being. The heart of any cluster is made up of those organizations that trade with the outside world. The effort to define a cluster begins by identifying the set of trading organizations, then moves on to identify suppliers, service providers and other supporting organizations (see schematic). Most often, the trading organizations are numerous (e.g., 100 plastics manufacturers), but sometimes the number can be as few as one (a single major employer).

While most clusters are centered around private enterprises that provide goods or services to customers in other locations, not all clusters fit this model. As one example, many regions are important centers of state or federal government activity. As another, many regions are important retirement centers — the customers come to live in the region, supported by pensions (transfer payments) and investment income derived from sources outside the region.

Because clusters usually include organizations across diverse industrial classifications, the membership of a cluster may not be immediately obvious. For example, a computer manufacturing cluster could include computer manufacturers, hard-drive manufacturers, plastic manufacturers, test equipment manufacturers, computer engineering firms, management consultants, educational institutions, temporary personnel agencies and professional associations. Determining cluster membership is an art, not a science.

Regional clusters can be identified through a combination of qualitative and quantitative methods, including the distribution of jobs and earnings by industry, expert opinion, review of business directories, surveys, industry interviews and focus groups, location quotients[38] and input-output analysis.[39] Specific information resources are listed below; books and articles on methods of regional economic and cluster analysis can be found on pp. 95-96.

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38 Location quotients are used to measure the extent to which the contribution of one industry to a regional economy is greater or less than the contribution of that industry to a larger, reference economy (usually, the United States). For instance, say that the fabricated metals sector provided 1.8 percent of all jobs in your region. The U.S. figure is 1.2 percent. The location quotient is 1.50 (i.e., 1.8/1.2). When used to measure industry concentration, a location quotient is taken as a rough indicator of a region's specialization in that industry. Certain industries are inherently traded, such as fabricated metals manufacturing. However, certain industries with local markets, such as health care and banking, may also serve outside markets as well. A high location quotient in these industries can indicate participation in broader markets.

39 An input-output table is a matrix of the buying and selling relationships among industries in a region, and between those industries and the outside world.

40 Industry Cluster. Edward M. Bergman and Edward J. Feser, *"Industrial and Regional Clusters: Concepts and Comparative Applications"*, The Web Book of Regional Science, Regional Research Institute, West Virginia University (1999), section 2.2, at http://www.rri.wvu.edu/WebBook/Bergman.Feser/contents.htm

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Type of Resource	Source
Employment and earnings data by industry	Regional Economic Information System, Bureau of Economic Analysis http://fisher.lib.virginia.edu/reis/index.html
	Current Employment Statistics, Bureau of Labor Statistics http://www.bls.gov/790home.htm
	Covered Employment and Wages, Bureau of Labor Statistics http://www.bls.gov/cewhome.htm
	State Labor Market Information Agencies http://www.iccsa.org/sections/links/index.cfm?stats
	County Business Patterns, Bureau of the Census http://www.census.gov/epcd/cbp/view/cbpview.html
Business and manufacturing directories	InfoUSA http://www.directoriesusa.com
	Industrial Who's Who http://www.industrialwhoswho.com/index.asp
	Manufacturers' News http://www.manufacturersnews.com/searchdownload.asp
	Harris InfoSource http://www.harrisinfo.com/index.html
Input Output Models	IMPLAN http://www.implan.com/index2.htm REMI http://www.remi.com/

Once a region's key clusters are identified, it is helpful to estimate the direct jobs and income contributed by each cluster to the region's economy. Understanding the relative importance of each regional cluster aids in decisions regarding where to focus economic development attention. It also is useful to determine which clusters appear to be emerging; though now small, some may have potential for significant growth.

Each major contributing or emerging cluster should be analyzed in terms of its competitive position:

- Where are the competing regional clusters located?
- In terms of size and growth rates, how does this region's cluster compare to these other regions?
- What is the basis of the regional cluster's competitive advantage? Where are its markets? To what extent does the cluster compete in these markets on value, cost or service?
- What are the cluster's competitive disadvantages in terms of value, cost and service?
- How has the regional cluster's competitive position changed over time?
- What are the competitive issues and opportunities facing the cluster in the future, given market trends (e.g., product development, industry structure)?

This competitive analysis is carried out through some combination of data analysis, literature review and interviews with local and national experts.

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An Illustration: Assessing the Rhode Island Economy[41]

In the mid-1990s, the state of Rhode Island had just barely recovered from the recession of the early 1990s. While its neighbors to the north, Massachusetts and New Hampshire, were rapidly advancing based on high-technology growth, Rhode Island seemed stuck in low gear. In reaction, the state established the Rhode Island Economic Policy Council to create and guide implementation of a state development strategy. As part of its strategy document, *Meeting the Challenge of the New Economy* (1997), the Council prepared a comprehensive assessment of regional outcomes and competitiveness. The full report is available at http://www.ripolicy.org/challenge.html.

Assessing Regional Innovation and Entrepreneurship

To what extent are innovation and entrepreneurship contributing to regional productivity? The competitiveness of a region's traded sector is a function of the extent to which innovation and entrepreneurship are taking place, both within individual clusters and across the regional economy as a whole. Through data sources, surveys and interviews, information can be gathered to complete an assessment of a region in these complementary areas.

The following suggests some ways to think about and measure innovation and entrepreneurship.

Business formation

New business formation is an indicator of an economic environment that encourages risk-taking. It is a key ingredient of business dynamism, in which the churn of business deaths and births can contribute to economic growth and reinvigoration. New companies form, some die, and the talent and ideas freed up from these deaths can migrate to other companies.

41 Due to Rhode Island's configuration and location, its boundaries approximate a region, particularly the Greater Providence metro area.

Measure	Data Sources
Business starts and incorporations	Dun and Bradstreet, http://www.dnb.com/newsview/economic.htm State secretary of state's office Http://mosl.sos.state.mo.us/stateweb.html Statistics of U.S. Businesses http://www.census.gov/csd/susb/susb.htm
Spin-offs from businesses, universities, and research institutions	Surveys (industry association or major employers) Association of University Technology Managers
Women- and minority-owned firms	Census Bureau http://www.census.gov/csd/mwb/
Presence of technology business development organizations	Organizations dedicated to facilitating the development of technology businesses often are sponsored by states, universities and non-profits.

Business Innovation and Fast-Growth Companies

Business innovation and fast-growth companies go hand in hand. The new products, processes and services that result from business innovation are critical to company growth. Often, fast-growing companies are garnering a significant percentage of their revenues from products developed in the past three years.

Fast-growth company environments are a dynamic training ground for entrepreneurs. Many times, these companies are responsible for spin-off companies, as they train talent and develop new ideas.

Measure	Data Sources
New business product innovation	Industry survey
Fast-growth "gazelle companies"	Derivable from Standard and Poors' Compustat data base, Corporate Almanac, Cognetics, Inc., Statistics of U.S. Businesses, and special runs of ES-202 data, available through the state LMI agency
Small Business Innovation Research (SBIR) Awards	Through the SBIR program, the federal government mandates that all federal agencies set aside research funds for contracts with small businesses. The list of SBIR awards winners is available at http://www.sba.gov/sbir/award.html

Productivity Increases

Productivity is the key to prosperity. Productivity is often measured as the output value per worker. Often, rising productivity is about creating more highly valued output with the same amount of input or fewer inputs. Whether you are doing more with less or the same, productivity growth is the basis for rising real wages for workers, increasing returns to shareholders, and increasing per capita income for a region and the nation. Innovation plays an important role in productivity growth.

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Measure	Data Sources
Value added per worker	Economic Census, Bureau of the Census http://www.census.gov/epcd/www/ec97stat.htm[42]
Application of new process technologies	The extent to which improvements in process technologies are being implemented can be learned through surveys and interviews.

Idea Generation and Commercialization

The extent to which organizations are developing new ideas with commercial potential can be captured in a number of ways, both from secondary data sources and through surveys.

Measure	Data Sources
Patent activity	U.S. Patent and Trademark Office, http://www.uspto.gov/web/offices/ac/ido/oeip/taf/reports.htm#by_geog CHI Research http://www.chiresearch.com/reg_tl.htm.
Technology commercialization	NASA Regional Technology Transfer Center (RTTCs) activity—RTTCs facilitate the commercialization of technologies developed at all federal laboratories. http://www.nttc.edu/technews/rttc.html University technology transfer offices — contact information can be found through the Association of University Technology Managers http://www.autm.net State and local organizations dedicated to facilitating technology transfer and commercialization.

An Illustration: Assessing Innovation and Entrepreneurship in Pittsburgh, PA

Throughout the 1990s, Pittsburgh had been engaged in a type of self-assessment that involved the use of indicators. Indicator documents were developed that compared Pittsburgh to other regions throughout the country. These exercises helped Pittsburgh to understand how it ranked relative to other areas on measures that were not always of central import or relevance to the region. In 1999, leaders in the region decided that it would make sense to engage in a self-assessment that "measured what matters" to the region — what is valued and to what leaders should want to make a commitment. Entrepreneurial industry, people and attitudes became the focus of the regional self-assessment. Regional leaders believed that these areas were the keys to developing a knowledge-intensive economy. In November 2000, regional leaders released the first Metrics for the Entrepreneurial Economy. This document represents both a self-assessment and a tool that will enable the region to determine how it is doing in growing its knowledge-intensive economy over time.

42. Value added is the value of shipments minus the cost of materials; dividing by number of workers yields value added per worker. Value added data are available from the Economic Census only for goods-producing industries (manufacturing, mining, and construction). If published data are not available for the regional configuration desired, customized data can be obtained from the Census Bureau's Center for Economic Studies (http://www.census.gov/ces/ces.www/ces.html).

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Assessing Knowledge Assets

What are the strengths and weaknesses of the region's knowledge economy asset base?

One approach to evaluating the region's asset base is asking key regional businesses, through interviews and surveys, how well the various dimensions of the asset base are meeting their needs and their priorities for improvements. Another is carrying out interviews with managers of asset-focused organizations (e.g., community colleges, banks and technical assistance programs) to determine the extent to which they comprehend the needs of their regional client base. It also is useful to analyze secondary data that measure various aspects of the asset base.

Organized by a series of key questions, each building block also refers to some data sources.

1. **Key Questions: Skills and Experience of the Regional Workforce**
   - To what extent does the regional workforce have the skills and abilities to carry out high value-added efforts?
   - Is the workforce effective in implementing day-to-day routines of production and service?
   - To what extent does the workforce have the capacity to learn, and then to develop and quickly implement new ways of doing things?
   - Are local K-12 and college systems adequately meeting the needs of all segments of the region's population?
   - Are the workforce training programs adequate for raising skills and abilities?
   - Does the region have management consulting services sufficient to meet the needs of new and growing businesses?

Measure	Data Sources
Educational attainment	2000 Decennial Census http://www.census.gov/dmd/www/2khome.htm American Community Survey (ACS) http://www.census.gov/ CMS/www Current Population Survey http://www.census.gov/population/www/socdemo/educ-attn.html
Workforce distribution by occupation	Decennial Census and ACS, Census Bureau Occupational Employment Statistics Program, BLS http://www.bls.gov/oes/oes_data.htm Geographic Profile of Employment and Unemployment, BLS http://www.bls.gov/opub/gp/laugp.htm

2. **Key Questions: Knowledge and Ideas**
   - How large is the inventory of intellectual property protected by patent laws and license agreements? What is the potential of that inventory for generating future income?
   - Does the region's workforce have a base of unique tacit knowledge, or know-how, that comes only through experience? To what extent does this tacit knowledge base come through the workings of individual clusters, the day-to-day interactions of cluster members? To what

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extent is this "know how" facilitated by networks and collaborative organizations? To what extent is this tacit knowledge base in danger of losing its competitiveness?

- To what extent is an ongoing willingness present to commit human and financial resources to continually generate new knowledge and ideas?
- To what extent are the support resources in place to quickly take advantage of new knowledge and ideas? These resources may be region-focused or statewide. (Examples include technical assistance programs, technology transfer and commercialization programs.)

Measure	Data Sources
Academic research and development activity	National Science Foundation at http://www.nsf.gov/sbe/srs/profiles/toc.htm
Patent activity	U.S. Patent and Trademark Office http://www.uspto.gov/web/offices/ac/ido/oeip/taf/reports.htm#by_geog
	CHI Research http://www.chiresearch.com/reg_tl.htm Association of University Technology Managers http://www.autm.net
Corporate R&D	Rand-RADIUS, NIST, Industrial Research Institute http://www.rand.org/scitech/radius/

3. **Key Questions: Access to Financial Capital**

- How much venture capital is available regionally? To what extent are local venture capitalists willing to invest in promising regional businesses (technology- and non-technology-intensive)?
- To what extent are regional bankers willing and able to extend needed debt finance to regional businesses.

Measure	Data Sources
Commercial lending *(particularly to small businesses)*	Small Business Administration http://www.sba.gov/advo/stats/lending/
	Community Reinvestment Act Aggregate Reports, Federal Financial Institutions Examination Council http://www.ffiec.gov/websraad/craaggr.htm
	Federal Reserve Regional Banks http://www.bog.frb.fed.us/otherfrb.htm
Venture capital investment	Venture Economics/National Venture Capital Survey http://www.ventureeconomics.com/
	San Jose Mercury-News http://www.sjmercury.com/svtech/companies/moneytree/
IPO activity	National IPO Database, Hale and Door http://www.haledorr.com/ipo/databases.html

4. **Key Questions: Quality of Place**

- To what extent does the region offer sufficient affordable housing?
- To what extent does the region have attractive and safe neighborhoods?
- To what extent does the region have a healthy environment?
- To what extent does the region have a reasonable commute to work?
- Does the region offer a distinctive quality of life?

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Measure	Data Sources
Quality of life	Money Magazine http://www.money.com/money/bestplaces
Affordable housing	The American Housing Survey, Census Bureau/Department of Housing and Urban Development http://www.census.gov/hhes/www/ahs.html National Low Income Housing Coalition www.nlihc.org/oor99/index.htm
Environment	Environmental Protection Agency http://www.epa.gov/epahome/ Data.html
Commute to work	Decennial Census and ACS, Bureau of the Census Urban Mobility Study, Texas A&M http://mobility.tamu.edu
Crime	Bureau of Justice Statistics, Department of Justice http://www.ojp.usdoj.gov/bjs/dtdata.htm

5. **Key Questions: Investment in Infrastructure**

Plant and equipment

- To what extent are members of key clusters investing adequately in advanced plant and equipment?
- In particular, is investment sufficient in the plant and equipment needed to generate new ideas (e.g., specialized research equipment)?

Physical and advanced communications infrastructure

- Is the region's infrastructure adequate for present and near-future business needs, in terms of transportation (roads, airport, rail, public transit), communications (broadband fiber optic), energy and waste management?
- Does the region have the multi-tenant industrial complexes it needs (e.g., industrial parks and business incubators)?
- To what extent does the state offer programs to support the development of physical infrastructure?

Measure	Data Sources
Manufacturing investment	Economic Census, Bureau of the Census http://www.census.gov/econ/www/econ_cen.html Center for Economic Studies, Bureau of the Census http://www.ces.census.gov/ces.php/home
Multi-tenant industrial complexes	Association of University-Related Research Parks www.aurrp.org National Business Incubator Association www.nbia.org

An Illustration: Greater Washington, DC's, Knowledge Assets Assessment

In the 1990s, business and university leaders in the Greater Washington Region recognized that the structure of their economy had undergone a shift, with increasing technology-intensive employment relative to federal government employment. Changing broader understanding of the nature of the region's economy suggested the need of an inventory of the "sources of innovation." Although it might no longer be just a government town, it was necessary to document this and to shift people's thinking about investment priorities and economic development strategies. An inventory of these sources or "knowledge" economy assets was taken, including federal labs, university research and fast-growth tech-intensive companies. Displaying the information visually, the data were mapped and overlaid to show the concentration of knowledge assets. As a result of this visual self-assessment, regional leaders asked the next important question for innovation-led development, "How well connected are our sources of innovation?" They have since begun planning a series of action initiatives to determine how to connect and leverage these institutions and organizations for greater economic impact in the region. Current projects include the planning of an innovation forum as well as other electronic means for connecting researchers, entrepreneurs and businesses.

Assessing Collaborative Institutions and Organizations

Is the scope and effectiveness of our base of collaborative leaders, networks and institutions sufficient for promoting innovation and entrepreneurship across the region?

Each region has a base of institutions with a purpose of promoting collaboration across organizations. Some collaborative institutions are regional, others focus on a particular cluster within the region, and others are statewide in scope.

- Does the set of collaborative institutions in the region have the appropriate scope? Are there any important regional players who do not have access to a collaborative institution?
- Is there a regional leadership council that includes leaders from the public and private sectors?
- Do each of the major industry clusters have collaborative institutions in which cluster members can interact and build relationships? Do these cluster organizations provide networking forums for the key professions within the cluster (e.g., CEOs, researchers, and marketers)?

- Do such cluster organizations involve service providers, such as training organizations, banks, and telecommunications providers?
- Is there a mechanism for collaboration among economic development organizations?
- Do entrepreneurs have a means for giving mutual support?
- Is there a mechanism for collaboration among researchers?
- To what extent are each of these organizations sufficiently encouraging collaboration and relationship building within as well as across their organizations? Are they missing any opportunities?
- How effective are each of these organizations in promoting collaboration and relationship building?

Examples of Collaborative Institutions and Organizations

Type of Organization	Examples
Regional leadership councils	Joint Venture Silicon Valley http://www.jointventure.org/
Regional chambers of commerce	Greater Austin Chamber of Commerce http://www.austin-chamber.org/Default.htm
	Greater Louisville Inc. http://www.greaterlouisville.com/
Trade and professional associations	Northeast Ohio Software Association http://www.neosa.org/
	Boston Computer Society User Groups http://www.bcs.org/
	San Diego Software Industry Council http://www.sdsic.org/
Technology business councils	Technology Business Council, Telecom Corridor http://www.telecomcorridor.com/tbc/index.html
	Pittsburgh Technology Council http://www.tc-p.com/council/phtc.html
	Silicon Prairie Technology Association http://www.silicon-prairie.org
	Advanced Technology Council of Greater Louisville http://www.latc.org/index.htm
Industry councils	Berkshire Plastics Network http://www.berkshireplastics.org/
	BIOCOM/San Diego http://www.biocom.org
	Information Technology Council of Southern Arizona http://www.itasa.com/itasa/index.htm
Entrepreneurship support networks	Council for Entrepreneurial Development, Raleigh, NC http://www.cednc.org
	Technology Resource Alliance, Entrepreneurship Center, George Mason University http://www.techalliance.org
	Greater Nashua (NH) Software Entrepreneurs Group http://www.gnseg.org
Invention/product development support networks	Cincinnati Network for Product Development, Inc. Http://www.cxxnet.com
	Inventors Connection of Greater Cleveland, Inc. Http://members.aol.com/icgc/index.htm

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Type of Organization	Examples
Economic development organizations	St. Louis Regional Science and Technology Alliance Http://www.technologygateway.org/index.html
	Suncoast Technology Alliance http://www.suncoastech.org/
	Los Angeles Regional Technology Alliance http://www.larta.org/
	Metro Denver Network http://www.denvernet.org/frameset.htm
Research and development consortia	Center for Advanced Fiberoptic Applications (MA) Http://www.cfaconsortium.org
	Spokane Intercollegiate Research and Technology Institute http://www.sirti.org/DefaultSc ul.htm
Venture clubs	Regional venture organizations http://www.nvca.org/resources/regintvo.html
	Venture capital clubs http://www.venturea.com/clubs2.htm

Some collaborations are direct, intentional, and market-focused, such as a joint marketing committee of an industry council. In addition, these organizations can promote the development of relationships among individual members, which in turn encourage collaboration on specific projects outside of the host organization. Relationship development efforts may be intentional. Many collaborative organizations, such as the St. Louis Technology Gateway, sponsor social networking events as means for creating the basis for collaboration. Relationship development also can be a byproduct of other activities, for example, managing the finance committee of a trade association.

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An Illustration: Assessing Cleveland's Collaborative Relationships

In the early 1980s, Cleveland was in significant economic trouble. Manufacturing employment had fallen by a third; the city was in fiscal crisis and suffered greatly from flight to suburbia. The adversarial labor relations model traditionally set the tone for the regional political culture, but in a time of decline, regional leaders recognized that cooperation, not confrontation, was needed. These leaders identified a number of traditional adversarial relationships that were blocking redevelopment and growth, including business-neighborhood, downtown-neighborhood, city-suburb, black-white, labor-management, rich-poor and mayor-city council. In response, these leaders created a number of regional collaborative institutions:

- Cleveland Tomorrow was a major corporate CEO-led organization with a mission of facilitating the economic renewal of the Cleveland metropolitan area. "Cleveland Tomorrow did not pretend to represent the business community. Its purpose was to provide a forum where the CEOs of the major corporations can 'come together to discuss what they see as the critical issues and try to develop a focused agenda for action.' "
- The aim of the Greater Cleveland Roundtable was "to bring leaders of different races and ethnic backgrounds together to address critical community issues." The Roundtable grew out of discussions between African-American leaders and corporate leaders regarding the African- American leaders' sense of removal from community decision-making.
- Leadership Cleveland, a program of the Greater Cleveland Growth Association (the regional chamber of commerce), was created to bring together leaders from government, nonprofits and for-profits to build relationships.
- Work in Northeast Ohio Council (WINOC) was established to bring labor and management together to increase productivity and competitiveness. WINOC was created because of the perception that, because of high wages and restrictive union work rules, Cleveland was a difficult place to do business.
- Cleveland Advanced Manufacturing Program (CAMP) was formed to 'stimulate and coordinate increased research and development activities through 'centers of technology excellence' at Case Western Reserve University, Cleveland State University and Cuyahoga Community College.

Assessing Mindset

How does our mindset support or inhibit innovation and entrepreneurship?

The assessment of a region's mindset has a number of dimensions. One dimension concerns the values held in individual organizations, clusters and the region at large about risk, change, learning and creativity, i.e., the values necessary for innovation and entrepreneurship.

- Is ***creativity*** encouraged and rewarded?
- Is ***risk-taking*** encouraged and rewarded?
- Are organizations and their workers ***forward looking***, seeking out new opportunities, or backward looking, seeking to ward off change?
- Is there a ***willingness to learn***, to understand what works and what might work better, and to be in a mode of ***continuous improvement?***
- Is there a willingness to examine and ***test widely-held beliefs*** about core markets, production methods, product design, key clusters, and what is possible and what isn't?
- Is there comfort in ***living with uncertainty?***

In addition, it is very important to identify and assess the dominant regional narrative, the shared story about where the region has been, where it is now, where it is going, and where it is able and not able to go. Understanding the regional narrative sheds light on the extent to which regional leaders may have an unnecessarily constricted view of future possibilities.

Similarly, narrative identification and assessment can be made for each of the region's key clusters. Cluster narratives typically build and integrate into the regional narrative.

An Illustration: The Importance of Mindset as a Catalyst of Change in Lehigh Valley, PA

Lehigh Valley shares a common history with many eastern regions of the United States. Its "Rust Belt" origins, domination by one to two industries, and boom-and-bust cycles had been an accepted way of life by residents. However, the global transformation of the steel industry in the 1980s shook this lifestyle to its core. Unemployment rates, peaking at 12 percent in 1982, were a painful reminder of the bygone days of good pay and benefits accessible to high school diploma recipients.

Yet by August 1999, Lehigh Valley had an unemployment rate of 3.7 percent. Today, the region's share of total employment in services now outstrips manufacturing, and there are clear signs of growing high-technology operations and business services. Since 1994, 65 technology-based companies, ranging from biotech to chip manufacturing, have become a part of the 731-square mile region that comprises Allentown, Bethlehem and Easton. These companies account for 12 percent of the total employment of the region.

It was not until the severe recession of the early 1980s that a group of business leaders visibly emerged to think strategically about the region's future. The combination of declining business and industry, coupled with the failure to cooperate among 15 economic development agencies all engaged in a zero-sum battle for the same potential clients, resulted in the formation of the Lehigh Valley Partnership and later the Lehigh Valley Economic Development Corporation.

A report commissioned by outside experts analyzed the regional assets, the potential synergistic industry areas that could be built on those assets, the institutional resources that could help facilitate this development, and the major barriers to development. The analysis and recommendations from the report were used as inputs for a strategy. The Partnership acted on the cluster focus areas and one underlying theme — "you are a region, and you need to think like one and act like one."

The fragmentation of the region, based on a traditional attraction-based model of economic development, was an impasse to technology-intensive progress. Leaders, as well as the average citizen, saw themselves as residents of Allentown or Bethlehem but not Lehigh Valley; there was no place on the map or in the hearts of residents called Lehigh Valley. It was determined that without a regional identity as its collective mindset for guiding internal practices and external marketing, the transition of this area to a technology-intensive region would not be successful. The need for collaboration across jurisdictions was imperative for building knowledge assets and fostering innovation and entrepreneurship in a knowledge-based economy.

As several regional observers recently commented, the "identity" of Lehigh Valley as a region has been forged, but it requires continuous and deliberate reinforcing, even today.

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- EconData.Net (www.econdata.net) – a Web site that provides hyperlinks, organized by subject and provider, to several hundred sources of on-line socioeconomic data.
- Data intermediaries — State and university-based organizations that can assist in finding and interpreting socioeconomic data can be identified through the Association for University Business and Economic Research (http://www.auber.org/htmls/leapcomp.html).

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- William Trochim, *Research Methods Knowledge Data Base*, "Survey Research" http://trochim.human.cornell.edu/kb/survey.htm
- "Survey Methods," University of Texas http://www.gslis.utexas.edu/~palmquis/courses/survey.html
- "Business Survey Methods," Balanced Scorecard Institute http://www.balancedscorecard.org/metrics/business_surveys.html
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- National Commission on Entrepreneurship http://www.ncoe.org
- State Science & Technology Institute http://www.ssti.org/
- Progressive Policy Institute, Technology and New Economy Project http://www.ppionline.org/
- Milken Institute http://www.milken-inst.org/
- The Brookings Institution, Center on Urban and Metropolitan Policy http://www.brook.edu/es/urban/urban.htm
- The Aspen Institute, Community Strategies Group http://www.aspeninst.org/csg/index.html
- International Economic Development Council http://www.iedconline.org/
- American Planning Association http://www.planning.org/

APPENDIX C: Tools for Action

Small Business Incubators

Business incubation is a dynamic process of business enterprise development. Incubators nurture young firms, helping them survive and grow during the startup period when they are most vulnerable. Incubators provide hands-on management assistance, access to financing, and orchestrated exposure to critical business or technical support services. They also offer entrepreneurial firms shared office services, access to equipment, flexible leases, and expandable space — all under one roof.

An incubation program's main goal is to produce successful graduates — businesses that are financially viable and freestanding when they leave the incubator, usually in two to three years. (from the National Business Incubation Association web site)

National association: National Business Incubation Association (NBIA) www.nbia.org
Directory: *Business Incubators in North America – 1998*, published by NBIA
Best practice material: NBIA Bookstore http://www.nbia.org/bookstore/index.php3
Experts: http://www.nbia.org/pubs/memdir.html

Examples of strategic use:

- Austin Technology Incubator (Austin, TX) www.ic2.ati.org/
- Mid-America Commercialization Corporation (Manhattan, KS) www.ktec.com/macc/macc-home.html
- Northeast Tier Ben Franklin Technology Center (Bethlehem, PA) www.net.bfp.org/
- West Virginia High Technology Consortium Foundation (Fairmont, WV) www.wvhtf.org/about/index.htm

Research Parks

A university-related research park or technology incubator is defined by AURRP as a property-based venture, which has the following:

- Existing or planned land and buildings designed primarily for private and public research and development facilities, high-technology and science-based companies, and support services.
- A contractual and/or formal ownership or operational relationship with one or more universities or other institutions of higher education, and science research.
- A role in promoting research and development by the university in partnership with industry, assisting in the growth of new ventures, and promoting economic development.
- A role in aiding the transfer of technology and business skills between the university and industry tenants.

The park or incubator may be a not-for-profit or for-profit entity owned wholly or partially by a university or a university-related entity. Alternatively, the park or incubator may be owned by a non-university entity but have a contractual or other formal relationship with a university, including joint or cooperative ventures between a privately developed research park and a university. (from AURRP Web site)

National association: Association of University-Related Research Parks www.aurrp.org
Directory: www.aurrp.org/parks.html
Best practice material: see AURRP library
Experts: www.aurrp.org/au rpcons.html

Examples of strategic use:

- University of Arizona Science and Technology Park (Tucson, AZ) uastp.arizona.edu
- Biomedical Research Foundation (Shreveport, LA) www.biomed.org
- Cummings Research Park (Huntsville, AL) www.hsvchamber.org/crp/
- Research Triangle Park (Raleigh-Durham, NC) www.rtp.org

Venture Capital

Professionally managed venture capital firms generally are private partnerships or closely held corporations funded by private and public pension funds, endowment funds, foundations, corporations, wealthy individuals, foreign investors and the venture capitalists themselves.

Venture capitalists generally:

- Finance new and rapidly growing companies;
- Purchase equity securities;
- Assist in the development of new products or services;
- Add value to the company through active participation;
- Take higher risks with the expectation of higher rewards; and
- Have a long-term orientation.

When considering an investment, venture capitalists carefully screen the technical and business merits of the proposed company. Venture capitalists only invest in a small percentage of the businesses they review and have a long-term perspective. Going forward, they actively work with the company's management by contributing their experience and business savvy gained from helping other companies with similar growth challenges.

Venture capitalists mitigate the risk of venture investing by developing a portfolio of young companies in a single venture fund. Many times, they will co-invest with other professional venture capital firms. In addition, many venture partnerships will manage multiple funds simultaneously (from NVCA Web site).

The concept of venture capital groups was begun in 1974 by Tom Murphy, in the form of the Connecticut Venture Group. In the early 1980s, the movement began to spread across the country. Currently, there are numerous groups in the United States and internationally.

Most of the clubs operate in a similar manner. Meeting once a month over breakfast, lunch or dinner, the groups begin with an informal networking period followed by a keynote speaker or panel which makes a presentation that pertains to entrepreneurship and the financing process. Presentations are then made by entrepreneurs who are seeking financing. Some clubs have a large number of presenters who only have 30 seconds to announce information about their projects while other groups have a qualifying process, which allows longer presentations.

All groups are open to the general public and most have a membership program, which provides for various benefits that usually include meal discounts and other membership perks. The large majority are not-for-profit operated and depend on volunteer staff to coordinate their various activities. (from Venture Associates Web site)

National association: National Venture Capital Association www.nvca.org

Directories:

- Regional venture capital clubs and groups www.venturea.com/clubs2.htm, www.nvca.org/resources/regintvo.html
- Venture capital companies www.nvca.org/members.html

Examples of strategic use:

- The Capital Network (Austin, TX) www.thecapitalnetwork.com
- Innovation Works (Pittsburgh, PA) www.innovationworks.org
- Atlanta Venture Forum (Atlanta, GA) http://www.growco.com/avf_entries/avfmaster-framepage.htm

Technology Business Development Centers

Technology business development centers aim to foster the formation and growth of technology-related businesses. Such centers come in several forms:

- Small Business Development Centers (SBDCs, funded by the U.S. Small Business Administration)—SBDCs with a technology business focus include:
  - Lehigh University SBDC (PA) www.lehigh.edu/~insbds/
  - Technology Assistance Center, Dallas Community College SBDC (TX) www.dcccd.edu/bip/tac.htm
  - Center for Technology and Small Business Development, Central Missouri State University http://153.91.1.141
  - ACCELERATE SBDC, UC Irvine (CA) www.accelerate.uci.edu
  - The Entrepreneurship Center at George Mason University (VA) www.ecenter.org/ecmain.htm
  - North Carolina Small Business and Technology Development Center www.sbtdc.org
- University-based entrepreneurship centers with a strong technology business component—examples include centers at the
  - CONNECT, University of California at San Diego iweb.ucsd.edu/connect/
  - O'Connell Center for Entrepreneurship and Technology, University of South Carolina www.edpsc.org/OCET.htm
  - Severino Center for Technological Entrepreneurship, Rensselaer Polytechnic Institute www.mgmt.rpi.edu/lally/cte/
  - Dingman Center for Entrepreneurship, University of Maryland www.mbs.umd.edu/dingman/

- Local-initiated and operated technology business development centers (often with incubator)—examples include
  - Innovation Works (Pittsburgh, PA) www.innovationworks.org/
  - Council for Entrepreneurial Development (Raleigh, NC) www.cednc.org/
  - The Enterprise Network (San Jose, CA) www.ten-net.org
  - Technology 2020 (Oak Ridge, TN) www.tech2020.org/
- Industry-specific technology business development programs (often with incubator)—examples include
  - Border Environmental Commerce Alliance (Chula Vista, CA) www.beca.net/home.html
  - Edison Biotechnology Center (Cleveland, OH) www.ebtc.org
  - MdBio in Maryland www.mdbio.org/
  - Positioning Information Technology Cluster (San Jose, CA) www.positioningitc.org/home.html
  - Pittsburgh Biomedical Development Corporation www.biopoint.org/
- State-initiated, locally operated business development centers—the states of California (www.goldstrike.net/resourceagencies.shtml) and Kansas (www.ktec.com/busassist/iccs.htm) have established a series of nonprofit entities with the purpose of stimulating the development of technology businesses.

National association: Association of Small Business Development Centers http://www.asbdc-us.org
Directory: University-based entrepreneurship centers http://www.slu.edu/eweb/center96.htm; SBDCs http://sbdcnet.utsa.edu/sbdc.htm
Best practices: Small Business Institute Directors' Association http://www.cba.uca.du/cbainfo/sbida/sbida.htm

Technology Transfer and Commercialization Programs

Technology transfer programs aim to facilitate the development of technology through technical assistance, licensing agreements, cooperative research and development, and information exchange. Commercialization programs seek to aid firms in bringing new technologies to market. Technology transfer and commercialization programs include:

- State-initiated, locally operated tech transfer and commercialization services
  - Florida has created a series of six Innovation and Commercialization Centers across the state (five nonprofit, one at a university). www.floridabusiness.com/technology/icc.html
  - Pennsylvania has four Ben Franklin Technology Centers across the state (several with satellite operations) that aim to grow technology firms through tech transfer and commercialization assistance. Most of the Centers offer tangible assets, e.g., incubator, capital, research grants. www.benfranklin.org/
- University-based services promoting access to technology and commercialization services. Examples include:
  - Commercial Services program, Engineering Technology Transfer Center, University of Southern California www.usc.edu/dept/engineering/TTC/COM/index.html
  - Cornell Office of Technology Assessment and Business Assistance www.research.cornell.edu/COTABA/COTABA.html
- Industry-university research and development centers. Examples include:
  - Industry-University Cooperative Research Centers (seed-funded by the National Science Foundation) http://www.eng.nsf.gov/eec/i-ucrc.htm
  - Engineering Research Centers (also funded by NSF) http://www.eng.nsf.gov/eec/erc.htm
  - Numerous states fund "centers of excellence" research centers at universities (e.g., Colorado, Kansas, Georgia, Montana, New Jersey, New Mexico, New York, Utah and Virginia)
- Local-initiated and operated technology transfer and/or commercialization efforts. Examples include:
  - Technology Transfer Committee, Huntsville Chamber of Commerce http://www.hsvchamber.org/crp/technology.htm
  - Cincinnati Network for Product Development, Inc., a network of experts to help in commercialization http://www.exxnet.com/
- Organizations promoting technology transfer from single federal laboratories:
  - The Wright Technology Network seeks to move technology out of the Air Force Research Lab in Dayton, OH, to businesses in a multi-state area. www.wtn.org
  - The Manufacturing Technology Transfer Center aims to transfer U.S. Navy technology in the Louisville, KY, region http://www.mttc.org/ipihm11.htm

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Technology Business Councils

Technology business councils are primarily business advocacy groups, a technology chamber of commerce. There are a large number of these at local level around the country. Examples include the Cape Cod Technology Council (www.capetech.com/), the Santa Cruz Technology Alliance (www.scta.org/), and the Industry and Technology Council of Central Ohio (www.ind-tech.org/index.html). The states of Pennsylvania and Maryland have fostered regional technology business councils across their states. An interesting local model is the Technolink Association in Southern California (www.technolinkassoc.org/techxt/indetxt.html), in that its primary, not secondary, function is to facilitate partnerships among members, which include technology businesses and technology business service providers.

Industry-Specific Trade and Professional Associations and Councils

Industry-specific associations can be found all across the United States for technology industries such as software, information technology, biotechnology/biomedical, optics/photonics, new media, telecommunications, plastics and computers. Associations exist at the state and substate levels. For the most part, substate associations are in metro areas with some agglomeration in the industry. However, there are few rural ones (in OR, NH, MA). Some may be dominated by companies; others by professionals. While many associations are affiliates of national organizations, a number are independent. Trade and professional associations and councils are importance tools for promoting relationship development, technology transfer, learning and innovation.

National associations with regional affiliates:

- Council of Regional Information Technology Associations www.itaa.org/crita/critamem.cfm
- Institute of Electrical and Electronic Engineers (IEEE) www.ieee.org
- Biotechnology Industry Organization www.bio.org/links/states.html

State trade and professional associations, for example

- Arkansas Biotechnology Association biotech.uams.edu/aba/aba.html
- Arizona Software Association www.azsoft.org
- Massachusetts Plastics Alliance www.mapaweb.org
- Software Association of New Hampshire www.swanh.org

Local trade and professional associations, for example

- BIOCOM/San Diego www.biocom.org
- South Florida Telecomm Forum www.teonline.com/teopro/pr62.html
- Chicago Software Association www.csa.org/index.html
- Berkshire Plastics Network www.berkshireplastics.org
- Software Association of Oregon (Rogue Valley Chapter) www.projecta.com/sao
- Austin Area Multimedia Alliance www.aama.org

Entrepreneurship Support Networks and Organizations

Technology entrepreneur networks and resources are provided by a variety of organizations and groups. Many are independent, e.g. in Atlanta (www.ytf.org), Gainesville (www.gain-net.org) and Silicon Valley (www.ten-net.org). Some are gender focused, e.g., the Center for Women & Enterprise (CWE) is the largest regional entrepreneurial training organization in Boston and Worcester, Massachusetts and Providence, Rhode Island (www.cweboston.org). These networks also include local venture clubs. Other entrepreneur networks are affiliated with a national organization, for example, the Council of Growing Companies, the MIT Enterprise Forum, and the Young Entrepreneurs Organization.

A number of entrepreneurship networks are industry-specific. For example, IEEE supports a few entrepreneur networks around the U.S. (e.g., Boston). There are a few independent industry-specific ones as well (e.g., Greater Nashua Software Entrepreneurs Group).

Organizations:

- *Kauffman Center for Entrepreneurial Leadership at the Ewing Marion Kauffman Foundation* www.entreworld.org
- Council of Growing Companies www.ccolink.org/ccolink/home.nsf/pages/about+the+council?Local
- MIT Enterprise Forum chapters web.mit.edu/entforum/www/chapters/chapters.htm
- Young Entrepreneurs Organization chapters www.yeo.org/about/chapters.htm
- Young Presidents' Organization www.ypo.org/index.htm (160 chapters)
- IEEE Entrepreneurs' Networks www.ieee.usa.org/business/entre.menu.html?network

Invention/Product Development Support Networks

Around the country, there are a number of support networks for inventors and product developers. Many of these are affiliated with national associations, others are independent.

National associations with local chapters or affiliates:

- Product Development & Management Association www.pdma.org.
- United Inventors Association of the USA www.uiausa.org/GroupMembers.htm

Directories of local organizations:

- www.inventorsdigest.com/connect/orgs.html
- www.gibbsgroup.com/inventor_orgs/clubs.html

Best practices for inventor groups:

- www.uiausa.org/GroupStandards.htm
- www.gibbsgroup.com/inventor_orgs/startup.html

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Examples of strategic use:

- Inventors' Connection of Greater Cleveland members.aol.com/isgs/index.htm
- Houston Inventors Association www.inventors.org/index.htm
- Inventors' Association of South Central Kansas www2.southwind.net/~rifreid/iasck

Technical Assistance Services

Technical assistance services aid corporations, primarily manufacturers, in upgrading process technologies; some programs also assist in product development and in improving business practices.

The Manufacturing Extension Partnership (MEP), managed by the National Institute of Standards and Technology, has a network of state affiliates around the U.S. These affiliates provide field agents who make client visits. A description of MEP and a list of state centers, with contact information, can be found at http://www.mep.nist.gov/

Numerous, primarily public, universities and some quasi-public economic development institutions sponsor technical assistance services; these services are distinct from (though often linked to) local MEP centers. Examples of public university technical assistance services include:

- Ohio Edison Materials Technology Center (EMTEC) http://www.emtec.org
- University of Maryland Engineering Research Center http://www.erc.umd.edu/
- Iowa State University, Center for Industrial Research and Service http://www.ciras.iastate.edu/
- Purdue University, Technical Assistance Program http://ce.ecn.purdue.edu/TAP/
- Pennsylvania State University at Erie, Plastics Technology Deployment Center http://ptdc01.bd.psu.edu/

National association:

- Modernization Forum http://www.modforum.org

Best practices:

- Modernization Forum http://www.modforum.org/publicat.htm
- Georgia Tech Policy Project on Industrial Modernization
  http://www.cherry.gatech.edu/mod/list.htm
  http://www.cherry.gatech.edu/workshop/index.htm

Examples of success:

- http://www.mep.nist.gov/index6.html

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